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OXYGEN WANT IN HEALTH AND DISEASE *

CHARLES W. GREENE, PH.D.

COLUMBIA, MO.

The amount of oxygen in the air we breathe is supplemented under so many different conditions in modern medicine that it seemed to me profitable to review the physiologic rôle of oxygen in the human body under conditions both in health and in disease. In the last decade many researches have been published which tend to clarify and increase our knowledge of the supply and use of oxygen by the human body. Not the least of the advances have been through the development of microchemical methods for measuring the oxygen content of small samples of blood. Such samples are easily obtained without detriment, not only in animal experimentation, but also in physiologic researches on man. Witness, for example, the epoch-making studies of Stadie,[1] of Harrop [2] and of Van Slyke and Stadie [3] on the oxygen and carbon dioxid content of the blood of man in health and in a variety of diseases.

The crux of the matter rests in the fact that the tissues of the human body consume oxygen in their every reaction. The need of oxygen is inherent in the basal processes of tissue activity. A greater need occurs in all those events which raise the intensity of the physiologic reactions of the living tissues. The minimal factor we designate as the basal metabolic rate. It is roughly defined as the rate of tissue oxidation when the living body is completely at rest, that is, when no extra muscular, nervous or digestive activity or other dynamic process is in progress.

The oxygen used above the basal metabolic needs is a measure of the dynamic factor. In animals with constant body temperature the basal metabolic rate bears a definite ratio to the surface area, as Du Bois [4] has clearly demonstrated. In a word, the surface area controls heat loss, and the rate of reaction of resting tissue is balanced against this loss in terms of heat production and oxygen consumption. Extra activity from any cause is also conditioned by equivalent oxygen consumption.

The delivery of oxygen to the tissues, and the elimination of the wastes of the oxidative processes form the biologic basis for the elaborate development of the respiratory apparatus and of the circulatory apparatus, with their complicated nerve and muscle coordinating mechanisms. In man and the vertebrates, the blood and its respiratory pigment are of paramount importance. In discussing the processes of normal oxygen supply I shall review only such aspects of these mechanisms as bear immediately and directly on the problem of extra oxygen supply.

THE OXYGEN CAPACITY OF THE BLOOD

According to the Haldane [5] standard, 100 c.c. of normal arterial blood, when fully saturated, contains 18.5 c.c. of oxygen, measured at standard pressure and temperature. In America we are finding that the oxygen capacity of blood is somewhat higher, more nearly 20 per cent. by volume. Our standards are largely derived in university laboratories, therefore, on young, energetic and healthy persons. Of this oxygen, only about 0.36 c.c. is in simple solution. The rest is carried in loose chemical combination with hemoglobin held according to the law expressed by the hemoglobin fixation curves of Barcroft and Camis.[6] These curves have been developed from hemoglobin solutions and from blood in equilibrium with known tensions of oxygen in vitro. In 1922 we [7] made these measurements in vivo in dogs, obtaining a curve that approximates that of Barcroft and Camis with remarkable exactness.

We review these experiments in order to stress the physical relationship between the partial pressure of oxygen in the pulmonary alveoli and in the blood, and the volumes of oxygen absorbed. Obviously, the data offer no support for the contention of Douglas and his colleagues [8] that there is a secretion of oxygen from the alveoli into the blood stream carrying oxygen across the membrane from a lower to a higher partial pressure.

The exact relationship of this oxyhemoglobin fixation curve is influenced by many factors. The details cannot be repeated here, but the most important factors are the percentage of certain salts in the blood and the hydrogen ion content. While the total oxygen capacity of blood will vary, for our purposes it suffices that the quantity of oxygen taken up by the blood as it circulates

* Chairman's address, read before the Section on Pathology and Physiology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Stadie, W. C.: Construction of an Oxygen Chamber for Pneumonia, J. Exper. Med. **30**: 323-335, 1919; Treatment of Anoxemia in Pneumonia in an Oxygen Chamber, ibid. **30**: 337-360, 1919.

2. Harrop, G. A., Jr.: The Oxygen and Carbon Dioxide Content of Arterial and of Venous Blood in Normal Individuals and in Patients with Anemia and Heart Disease, J. Exper. Med. **30**: 241 (Sept.) 1919.

3. Van Slyke, D. D., and Stadie, W. C.: Studies of Acidosis: Carbon Dioxide Content and Capacity in Arterial and Venous Blood Plasma, J. Biol. Chem. **41**: 191 (Feb.) 1920.

4. Du Bois, E. F.: A Series of Articles on Metabolism in the Archives of Internal Medicine, 1915 and 1916.

5. Haldane, J. S.: The Therapeutic Administration of Oxygen, Brit. M. J. **1**: 181-185 (Feb. 10) 1917.

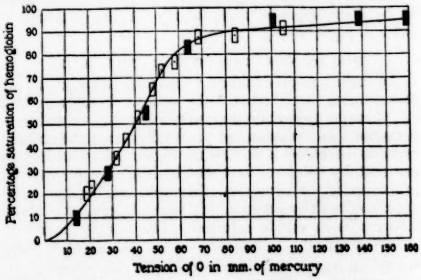
6. Barcroft, J., and Camis, M.: The Dissociation Curve of Blood, J. Physiol. **39**: 118-142, 1909.

7. Greene, C. W., and Greene, C. H.: The Partial Pressure of Oxygen in the Blood at Different Stages of Anoxemia, J. Biol. Chem. **52**: 137 (May) 1922.

8. Douglas, C. G.; Haldane, J. S.; Henderson, Yandell; and Schneider, E. C.: Physiological Observations Made on Pike's Peak, Colorado, with Special Reference to Adaptation to Low Barometric Pressures, Phil. Tr. Roy. Soc. London **203**: 185-318, 1912.

through the lungs is conditioned, first, by the percentage of hemoglobin present, and, secondly, by the capacity of hemoglobin to obtain and fix its full quota in the small fraction of time in which the blood in the pulmonary capillaries is exposed to the particular partial pressure of oxygen present in the alveoli. This quota at sea level is 96 per cent. of 18.5 volumes. At a barometric pressure of one third of one atmosphere, corresponding to an altitude of 28,000 feet, it is about 70 per cent. of the 18.5 c.c., a total of 13 c.c. of oxygen per hundred cubic centimeters of blood.

The diffusion rate of oxygen through the walls of the normal alveoli and the pulmonary capillaries is adequate through a wide range of oxygen pressures. The blood is in the pulmonary capillaries only about one second, yet the oxygen diffuses into the venous blood fast enough to oxygenate it to arterial blood in the first two fifths of this time. There is variation among individuals, but a 60 per cent. margin of safety in diffusion time exists; in fact, 80 per cent. is indicated by the observations on athletes by Henderson and Haggard.[9] This margin alone is adequate to insure the complete oxygenation of venous blood should it enter the lungs



Dissociation curve of dog's blood at 40 mm. tension of carbon dioxid: ordinates, percentage of saturation of hemoglobin; abscissas, tension of oxygen in millimeters of mercury. The plain rectangles denote dissociation determinations of Barcroft and Camis for blood in vitro. The cross-hatched rectangles denote the determinations of Greene and Greene for arterial blood against partial pressure of alveolar oxygen in vivo. The area drawn around the points is the experimental error in each case.

entirely reduced instead of 75 per cent. oxygenated as in the normal. In pulmonary inflammations, on the other hand, especially when associated with edema, the rate of absorption of oxygen may be greatly retarded.

NORMAL ALVEOLAR OXYGEN PRESSURES

The rate of absorption of oxygen from the alveoli is controlled by the laws governing the diffusion of gases; hence it is conditioned solely by the difference in oxygen pressure and by the permeability of the membrane. The pressure represents a fluctuating equilibrium between three factors: (1) the absorption of oxygen from the alveoli, (2) the diluting effect of added carbon dioxid, and (3) the rate of renewal of the alveolar air determined by the volume and depth of respiration. Variation in the mechanical act of respiration influences all these factors, since a greater respiratory volume per minute produces a more rapid renewal of alveolar air, and, therefore, keeps the oxygen supply at a relatively higher partial pressure and reduces the dilution by carbon dioxid. The greater diffusion of carbon dioxid from the blood through the alveolar walls reduces its content in the blood. This, in turn, permits a more complete saturation of the hemoglobin at any given pressure of oxygen. The respiratory compensations to any and all forms of stress from oxygen deficiency must be analyzed through these factors of physiologic readjustment.

THE PHYSIOLOGY OF HIGH ALVEOLAR OXYGEN PRESSURES

The arterial blood leaving the lungs has an average saturation of 96; i. e., from 94 to 97 per cent. Let me here anticipate and answer the fallacious assumption that the physiologic effect of enrichment of the air is proportional to the increase in the content of oxygen breathed. Under normal conditions if the amount of oxygen in the air breathed is raised from 21 to 60 per cent., the increase can influence the volume of arterial oxygen only in two small items: (1) The oxygen in simple solution will be trebled, i. e., raised from 0.36 to 1.08 c.c. per hundred cubic centimeters of blood, an increase of only 4 per cent. in total oxygen; (2) the margin of unsaturated hemoglobin may be satisfied by at most a further average increase of 4 per cent., or 0.8 c.c. per hundred cubic centimeters of blood. The total advantage is the sum of these two, an increase of 1.52 c.c. This small increase of oxygen is of little value to the normal man in whom the venous oxygen reserve is already from 13 to 15 c.c.; i. e., ten times greater.

In fact, enriched oxygen if breathed long enough may do positive harm to the lung tissue by inducing pulmonary inflammation. In caisson work, deep sea diving, etc., in which the partial pressure of oxygen is raised by the method, increasing the total atmospheric pressure, the same physiologic laws apply as when oxygen is added to normal airs.

The current belief that the accelerated chemical reactions which occur in airs of high oxygen content occur also in the human body on breathing rich oxygen mixtures has been tested in the recent experiments of Meyer[10] and of Karsner.[11] Meyer showed that canaries in one atmosphere of pure oxygen do not deviate in any detectable measure from normal birds. It is well known that inflammation may be produced in the lungs by prolonged breathing of pure oxygen. Karsner has exhaustively studied many organs. He finds that little or no trace of injury occurs in any organ except the lungs. Breathing an excess of oxygen of more than 60 per cent. for hours induces fibrinous pneumonia. Novy[12] finds that 60 per cent. oxygen inhibits growth of hemoflagellates, and Cleveland kills ciliate infusorian fauna in the alimentary tracts of insects and of frogs by one atmosphere or more of oxygen. In man, the excess of oxygen absorbed by the plasma of pulmonary blood under higher oxygen pressures is rapidly depleted to the pressure level of hemoglobin dissociation, and, hence, does not benefit the general tissues.

There is, therefore, at present no basis for assuming that an excess of atmospheric oxygen has any advantage to the normal body, and amounts above 60 per cent. by volume may injure lung tissue.

THE PHYSIOLOGY OF LOW ALVEOLAR OXYGEN PRESSURES

Conversely, if the oxygen content of the air is progressively reduced so that the alveolar partial pressure

9. Henderson, Yandell; and Haggard, H. W.: The Maximum of Human Power and Its Fuel, Am. J. Physiol. **72**: 264, 1925.

10. Meyer, A. L.: The Effect on the Metabolism of Breathing Pure Oxygen at a Pressure of One Atmosphere, Am. J. Physiol. **65**: 148 (June) 1923.

11. Karsner, H. T.: The Pathological Effects of Atmospheres Rich in Oxygen, J. Exper. Med. **23**: 149 (Feb.) 1916.

12. F. G. Novy and Students: A series of articles on Microbic Respiration, J. Infect. Dis. **36**: 109, 168 and 245, 1925.

becomes lower and lower, then the oxygen absorbed by the alveolar blood is also reduced, not, however, in a proportionate or linear manner but according to the curve of hemoglobin dissociation. At the partial pressure of oxygen in air of 159 mm., the degree of saturation of the arterial blood is 96 per cent.; at a partial pressure of 100 mm. of oxygen, 90 per cent.; at 75 mm., about 88 per cent.; at 50 mm., about 66 per cent., and at 30 mm., about 33 per cent. The minimal oxygen pressure by which dogs and normal men may still receive the basal metabolic oxygen requirement is 30 mm. Any further reduction leads to prompt death from oxygen deprivation.

THE ANOXEMIAL CRISIS

Dr. Gilbert and I [13] have presented the compensating reactions of a progressive deprivation of oxygen for men and dogs in papers published in 1921 and 1922. Our researches offer numerous data supplementing and explaining the known reactions of man, especially in the acutely critical postcrisis of these tests. The compensating events in progressive experimental anoxemia which have their counterpart in the anoxemias of disease are summarized as follows:

1. The volume of air respired is augmented as anoxemia progresses by an increased rate and increased amplitude of respiration, which together often increase the respiratory volume fivefold. These anoxemial reactions tend to maintain the partial pressure of alveolar oxygen at its highest possible approach to the oxygen level of the reduced intake. It rids the body of the excess of carbon dioxid in a corresponding degree.

2. The diffusion rate of oxygen from the alveoli into the pulmonary capillaries proceeds according to the law of relative pressures. It is quite adequate to insure an arterial saturation of from 90 to 95 per cent. of the theoretical capacity, even at the lowest critical level, about 6 c.c. of oxygen per hundred cubic centimeters of blood.

3. The limit of respiratory compensation is reached quite suddenly, and earlier than the circulatory limit.

4. In the postcrisis, respirations decrease in volume, rapidly fall off in rate, and suddenly cease. Respiratory revival readily occurs on artificial respiration with normal air.

5. The volume of blood per minute that passes the alveoli in progressive anoxemia is slowly but progressively augmented till the moment of the respiratory crisis, after which it sharply declines.

6. The heart slows by vagospasm, a reaction that is proved by sectioning the vagi at the height of the slowing. When the vagi are cut the heart rate jumps to even a higher rate than during the precrisis acceleration. We know that vagospasm occurs in normal man, and we assume that it is also true for the asphyxial diseases. After the vagal mechanism is paralyzed by prolonged anoxemia, or by toxins, the reaction is of course lost.

The reaction complex designated as the crisis occurs in normal man when the inspired air contains an average of 6 per cent. by volume of oxygen or less. In dogs, which have a higher capacity for resistance than men, the oxygen respired may be reduced to 3 or even 2 per cent. by volume before death. The crises of respiration are due to the sensitivity of the medullary centers to the effects of an inadequate oxygen supply. The heart itself is very resistant to asphyxiation. Normal beats continue for three minutes or so after respirations stop. These beats, though gradually decreasing in mechanical efficiency, are of sufficient energy to maintain the circulation for a period of about two minutes. However, continued cardiac activity is indicated by a normal electrocardiogram for five minutes or more after respirations cease.

THE SIGNIFICANCE AND DANGER OF THE ASPHYXIAL POSTCRISIS EVENTS

Since the anoxemial crisis marks the crest of physiologic compensations, the events of the postcrisis are the signs of rapid decline of functional reactions because of acute oxygen deficiency. With the cessation of respiration there is, of course, no further intake of oxygen, although the circulation of the blood maintains an oxygen distribution within the body the few remaining moments before absolute tissue asphyxiation.

The strain of oxygen deficit is greatest on the nervous system. Unconsciousness occurs at the respiratory crisis, sometimes only at the onset of vagospasm; i. e., with the slowing of the heart and precipitous fall of blood pressure. A patient whom Gilbert and I examined passed through this stage, from that of adequate heart rate, strong blood pressure and alert consciousness, to unconsciousness and collapse with respiratory failure in the brief interval of ten seconds. His heart rate, plotted beat by beat, fell from 136 per minute to 44 per minute in eighteen seconds.

THE REMEDY FOR ANOXEMIA—AN ARTIFICIAL OXYGEN SUPPLY

Experience has long since taught that the remedy for the anoxemial crisis is an immediate and liberal supply of oxygen, either by artificial or by natural means. The young man whose heart rates we just quoted recovered consciousness in forty seconds when given room air by artificial respiration. A supply of oxygen has been the answer to the problem of maintaining normal activity in the extreme altitudes attained in aviation. A man can live in the most obnoxious gases of mines or war trenches if he has an artificial oxygen supply.

The reactions on reoxygenation are instantaneous and outstanding. The reflexes of the vagus disappear in from eight to ten seconds. Consciousness returns with equal facility. Motor coordinations and the finer sensory reactions return more slowly. The peripheral vascular spasms are almost immediately relaxed, and cardiac acceleration is prompt and profound. The evidence of asphyxial stimulation of the basic motor centers in the spinal cord and brain stem rapidly disappear.

A factor of slower reaction through the slower processes of hormone secretion under profound asphyxial spasm occurs in the suprarenal glands, as demonstrated by Cannon and Hoskins.[14] A patient in asphyxiation and displaying the motor spasms therefrom will relax immediately on reoxygenation, a state desired in operative technic and of bearing in nitrous oxid and other types of anesthesia.

OXYGEN WANT IN ANESTHESIA

The practical bearing of my theme is illustrated by the conditions that occur in the anoxemias of anesthesia and of disease.

13. Greene, C. W., and Gilbert, N. C.: Studies on the Responses of the Circulation to Low Oxygen Tension, VI, The Cause of the Changes Observed in the Heart During Extreme Anoxemia, Am. J. Physiol. **60**: 155-192 (March) 1922.

14. Cannon, W. B., and Hoskins, R. G.: The Effect of Asphyxia, Hyperpnea and Sensory Stimulation on Adrenal Secretion, Am. J. Physiol. **29**: 274, 1911-1912.

Investigations of anoxemial reactions have given more certain knowledge of the minimum oxygen requirements of man, determinations applicable in both anesthesia and disease. It has been known for more than fifty years that prolonged nitrous oxid anesthesia can be maintained only by a supplementary oxygen supply. The theory that oxygen can be liberated from the nitrous oxid molecule and thus become available for bodily uses has long been disproved and abandoned.

Andrews,[15] 1869, first added oxygen to nitrous oxid in the production of prolonged anesthesia. Kemp,[16] in 1897, determined the percentage of oxygen in nitrous oxid mixtures that induce anesthesia in animals. He also analyzed the gases in the arterial blood. Data [17] from our laboratories present both the respiratory and the blood gas percentages in numerous animals under prolonged nitrous oxid-oxygen anesthesia. Our data were obtained by the newer and more accurate microchemical methods of blood gas analysis. The data demonstrate that the variations in the degree of nitrous oxid anesthesia are obtained, not so much by varying the concentration of nitrous oxid in the gas breathed as by varying the coincident percentage of oxygen. Animals may be alternated between deep and light anesthesia by varying the percentage of oxygen of the nitrous oxid-oxygen mixture inhaled.

All these data emphasize the fact that the anesthesia produced by nitrous oxid is, in fact, very closely related to the unconsciousness produced by simple anoxemia. There is little difference between diluting the oxygen to the asphyxial stage by the very soluble nitrous oxid and diluting it by the sparingly soluble nitrogen. The solubility of the former in the body tissues apparently produces a wider range of control, and is a more flexible and therefore safer method for clinical use. Parallel determinations of the amount of gases present in the blood at the incipient stages of unconsciousness from nitrogen asphyxiation and nitrous oxid anesthesia show a surprising correspondence. The unconsciousness and relaxation are, in fact, dependent on the degree of deprivation of oxygen to the nervous system.

Oxygen deficiency undoubtedly is an important factor in the production and maintenance of anesthesia by ethylene or ether. Physiologic and medical laboratories have for some time suspected that current practices in inducing ether anesthesia produce critical reductions in available oxygen to the patient.

The analyses of Kruse [18] in 1922-1923 show that the composition of the air under the mask in surgical anesthesias may contain as little as 6 per cent. of oxygen and may have a variation of between 3.6 and 6.58 per cent. of ether vapor. It is known that the amount of ether in the blood in deep surgical anesthesias cannot safely pass 36 per cent. by volume, and averages 20 to 25 per cent. by volume. The arterial oxygen varies from 16 to 18 per cent. by volume (dogs) to as low as 6 per cent. by volume in very deep anesthesia. These figures at once emphasize the danger in the reduction of oxygen during ether anesthesias.

In anesthesias induced by combinations of narcotics, analgesics and localized applications, the relations of the oxygen supply are, as a rule, not very acutely changed, and then only through secondary interference with vascular or respiratory compensations.

OXYGEN AVAILABILITY IN DISEASE

The importance of an extra supply of oxygen in certain diseases has been discussed by clinicians in many valuable papers. One of the comprehensive papers of this group was presented before the Section on Pharmacology and Therapeutics at St. Louis in 1922 by Dr. Barach.[19]

The effects of oxygen want must be especially considered in the diseases that decrease the volume capacity of the lungs, as in pneumonia; that interfere with the normal structure of the pulmonary epithelium, as in pulmonary edema and gassing; that reduce the efficiency of the heart, whether from vascular changes or myocardial insufficiency, or that reduce the oxygen capacity of the blood by a dearth of respiratory pigment, as in anemia. I shall briefly review the facts that seem to clarify the understanding of the basic physiologic principles involved in the supply of extra oxygen in these diseases. I shall omit questions of the practical application except as they involve the physiology of oxygen therapy.

In pneumonia, for example, it has been shown that there is an actual diminution in the vascular capacity of the lungs. A decrease in volume of the blood vessels has been shown, at least in the areas of gray hepatization. Apparently an adequate circulation is maintained in the red areas. Neither red nor gray areas can receive alveolar air. We may, therefore, independent of all other considerations, look on consolidation as reducing the total pulmonary vascular capacity by only a very slight degree, and at the same time reducing the alveolar capacity by a decidedly large degree. If we assume the normal minute-volume flow of pulmonary blood to be 100 per cent., and the alveolar normal capacity also 100 per cent., then at a stage of the disease in which there is profound red hepatization with reduction in alveolar air capacity, for example, to 60 per cent. of the normal, the pulmonary blood volume will be practically normal but the aeration only 60 per cent. efficient. Emphasis must be placed on the percentage of nonaerated arterial blood entering the systemic circulation. The contributory facts are actually somewhat more complicated; but, broadly speaking, such mixed blood has an oxygen content not very different from 60 per cent. of the total oxygen capacity. It is readily seen that any other degree of pulmonary consolidation will reduce the oxygen content of the mixed arterial blood in a fairly direct proportion to the interference with the absorbing surface. For example, a two-thirds reduction in alveolar efficiency will provide only a one-third oxygen saturation of the blood, which is the critical minimal percentage that maintains life. With an extreme degree of anoxemia there are always uncertain and irrational cerebral reactions and unconsciousness, and these progress rapidly until death. The effects on the nervous system are not different in disease. When available oxygen is inadequate, there is delirium, unconsciousness and coma from this source. However, in disease, at the time the oxygen supply approaches the minimal tissue requirement, the tissue strain is already augmented by toxic products of the infection, and the breaking point is at a correspondingly higher oxygen level.

15. Andrews, E.: J. Brit. Dent. Soc. **22**, 1869.
16. Kemp, G. T.: Nitrous Oxide Anesthesia, Brit. M. J. **2**: 1480, 1897.
17. Greene, C. W., and Currey, H. M.: The Respiratory Gas Percentages During Nitrous Oxid Anesthesia in Dogs, Arch. Int. Med. **35**: 371 (March) 1925. Greene, C. W., and Assistants: The Distribution of Nitrous Oxid and Oxygen in the Blood of Dogs During Gas Anesthesia, ibid. **35**: 379 (March) 1925.
18. Kruse, T. K.: Studies in Narcosis, I, Ether Analysis, J. Biol. Chem. **56**: 127-137 (May) 1923; II, A Method for the Determination of the Respiratory Exchange During Ether Narcosis, ibid. **56**: 139-155 (May) 1925; III, Certain Experimental and Clinical Observations in Ether Anesthesia (with Adolphus Koenig), Anesthesia and Analgesia **2**: 179-181, 1923.
19. Barach, A. L.: The Therapeutic Use of Oxygen, J. A. M. A. **79**: 693-699 (Aug. 26) 1922.

This discussion has not specifically considered the percentage of oxygen in the venous blood returning to the lungs. Barach's data show an average venous unsaturation of 57 per cent. in a group of fatal cases, but unsaturation may be as extreme as 87 per cent. The prolonged strain of oxygen want at the critical level leaves the patient without reserve to meet any crisis.

The rationale of oxygen therapy in pneumonia and similar diseases may be thus summarized:

1. In pneumonias there is little if any immediate reduction in hemoglobin; in fact, concentration of the blood may increase the hemoglobin considerably above the normal. If oxygen is administered so that its partial pressure in the active alveoli is raised to a higher level, say to 60 per cent. of oxygen, then by so much will the absorption of oxygen be facilitated.

2. The absorption of an increased quantity of oxygen is favored by two factors—the greater partial pressure and faster rate of diffusion through the alveolar walls, and the greater volume fixation by the hemoglobin in the available time of the circulation. Normally, oxygen diffusion and fixation is completed in from two fifths to three fifths of the total time the blood is in the pulmonary capillaries. But, normal venous blood is already from 50 to 70 per cent. saturated with oxygen, requiring only about 30 per cent. additional to raise the content to the arterial level. Venous blood in the pneumonic crisis returns to the lungs all but exhausted of its oxygen. That proportion of the blood aerated through good alveoli will be oxygenated to from 98 to 99 per cent. saturated in an enriched atmosphere.

3. By calculation it is apparent that the total advantage of enriched air to the fraction of blood through normal alveoli is only from 8 to 10 per cent., an average in aeration of 5 per cent. by volume or more for the total blood. In Stadie's case this was enough to remove the obvious signs of cyanosis, to quiet the excessive respiratory and circulatory reactions of anoxemia expressed in reflex and automatic reactions through the medulla, and to clear the cerebral confusion. Oxygen is, of course, of no avail in pulmonary consolidation when edema has gone beyond the stage at which total oxygen absorption is less than the pathologic metabolic needs.

The administration of oxygen in diseases characterized by oxygen deficit is both logical and profitable. The difficulty has been to devise methods of administering oxygen that overcome both the physical and the medical difficulties. The patient must breathe oxygen of controlled higher percentages than in normal air. He objects to the face mask and similar devices used in emergency administration. Guedel's [20] head and face tent is the best of these bedside devices. It is most desirable that the patient be surrounded by an atmosphere of enriched oxygen. That method has been met by the oxygen chamber method of the Rockefeller Hospital, as described by Stadie [1] in 1919. The complete plant consists of a closed room of sufficient capacity for the patient and attendants, with automatic air circulation and ventilating system, and air cooler, carbon dioxid absorbers, automatic oxygen analyzers, and automatic oxygen maintenance. Stadie designed the station to maintain from 40 to 60 per cent. of oxygen in the air of the chamber. It is convenient and sane, and it conserves energy, time and expense of maintenance, and is a very ingenious and workable outfit.

20. Guedel, A. E.: Oxygen Therapy in Pneumonia, J. A. M. A. 84: 1490 (May 16) 1925.

Dr. Stadie has described the treatment of a series of patients through this chamber, patients with pneumonia with an extremely grave prognosis, and in the stage of pronounced cyanosis with respiratory and circulatory upset. Fortunately, he has also used certain patients with chronic pulmonary lesions with superimposed acute pneumonias. A study of Stadie's protocols, graphs and figures reveals a remarkably close correspondence between the blood oxygen content and respiratory and circulatory stress, as compared with similar responses to like oxygen want in normal animals and man.

A cyanosis expressed by an arterial oxygen deficit of from 20 to 37 per cent. in patients before entering the chamber was quickly reduced to an arterial oxygen deficit of only from 5 to 10 per cent., with reappearance of scarlet color.

Stadie's Patient 7 was pulseless, deeply cyanotic, with breathing gasping, difficult and spasmodic, an apex beat of 160 but not palpable pulse, and with extreme moist râles all over both sides. The patient was in coma when put into the oxygen chamber at 50 per cent. oxygen. In a short time the cyanosis disappeared; respirations became more regular and rapid, increasing to 36, and soon had lost the gasping quality. In a few hours the pulse had returned to the radial artery and the rate had fallen to 100. The temperature also fell, and the patient became rational.

All these changes are duplicates in kind of those observed in experimental animals which pass from the postcrisis stage of anoxemia by breathing adequate oxygen. The recovery of Stadie's patient seems and is miraculous; but it is the miracle of medical science clearly demonstrated by anoxemic animals.

The literature contains only unsatisfactory data to determine the extent to which oxygen absorption in the lungs is retarded by simple imflammation and by edema. It is obvious that the consolidation in lobar pneumonia blocks oxygen absorption, since oxygen is excluded from the alveoli. Kline and Winternitz have published evidence to show also a reduction of volume of the blood through consolidated areas, especially gray areas. Red areas, through which blood is flowing but from which no oxygen is absorbed, decrease the percentage of total arterial partial unsaturation. The measured arterial oxygen in Stadie's pneumonia cases, and the corresponding cases of Harrop, represent human data on this relation. Apparently the spread of areas of moist râles, rather than consolidation alone, contributes to the arterial unsaturation in Stadie's cases. Similar results are apparent in the measurements of arterial oxygen following edemas from war gassing. In all these types, the stress of the anoxemial crisis is reduced by enrichment of the inspired air.

The severity of the anoxemial crisis in disease is revealed by a comparison of the oxygen fixation curves of these patients as against the basal metabolic needs of the body. The data are revealed by coincident venous and arterial oxygen determinations. In view of the experimental background, I, for one, pay honor to the epoch making clinical papers by Stadie, by Harrop and by Lundsgaard. All these papers were immediately made possible by the development of the Van Slyke blood gas micro-analyzer.

THE OXYGEN PROBLEM IN CARDIAC DEFICITS

Circulatory deficits of various types—regurgitations, stenosis, fibrillation, and the like—all tend to reduce the minute-volume of the circulating blood. In themselves

they have nothing directly to do with pulmonary deficiency. Oxygen is present in the alveolar air in adequate concentration. It diffuses through the alveolar walls to the usual or normal degree of arterial saturation. But the minute-volume of the circulation is so reduced that the total oxygen carried to the tissues is inadequate. Those in the main are not cases for supplying an enriched air. All that can be accomplished thereby is the slight augmentation of arterial saturation already approximately normal in these cases. In the stage of decompensation, on the other hand, as shown experimentally by Drinker, the pulmonary congestion and edema may lead to actual reduction of respiratory volume. Enriched oxygen should give temporary relief.

ANEMIAS

The anemias are characterized by the reduction in the amount of the respiratory pigment. Such bloods are normally saturated with oxygen during passage through the lungs, but an inadequate total volume is absorbed to meet the metabolic needs of the body. As shown by Fahr, anemias are not cases for the administration of oxygen. The same is true for blood depleted by excessive hemorrhage. Life can be saved only by augmenting the minute-volume of the blood and by increasing the percentage of hemoglobin.

SUMMARY

1. Administration of oxygen has no advantage to the normal body.
2. Airs of more than 60 per cent. of oxygen may produce pulmonary inflammation by local action.
3. Oxygen administration has no physiologic clinical advantage in hemorrhage, anemia or other circulatory mechanical defects.
4. Oxygen enriched airs are of life saving value in all clinical cases of pulmonary obstruction, edemas or other deficiencies that retard the process of oxygen absorption or prevent the full saturation of the hemoglobin of the pulmonary blood.
5. Oxygen administration must be controlled by recognized physiologic methods, must be continual, and must not produce local pulmonary injury.
6. Oxygen administration cannot be successfully pursued except with clear understanding of the type of response to anoxemia and the recoveries on reoxygenation through the complex and interdependent reactions of the nervous system, the respiratory system, the circulatory system and the blood. For all these we have in present day methods and animal verification an accurate scientific basis of determination.

Standardization of Pollen Extracts.—The complement-fixing property of ragweed pollen extracts is due to a labile fraction and is one of the first properties of the extract to deteriorate; its rate of deterioration bears no definite relation to the rate of deterioration of the portion of the extract which causes shock. The complement-fixing property of ragweed pollen extract is a nonessential attribute so far as the value of the extract for treatment is concerned. Complement fixation as a means of standardization of ragweed pollen extracts should be applied only to extracts of stable antigenic nature, which, however, should be tested soon after extraction is completed. Complement fixation for standardization of ragweed pollen extracts which are not stable in antigenic properties is fraught with danger, because overdosage may result; for some extracts which are relatively unstable as regards their complement-fixing properties may lose the latter, while their ability to cause shock is relatively unaltered.—Armstrong, C., and Harrison, W. T.: *Pub. Health Rep.* **40**:1472 (July 10) 1925.

TUBERCULIN

CHEMICAL COMPOSITION OF THE ACTIVE PRINCIPLE AND THE NATURE OF THE TUBERCULIN REACTION *

ESMOND R. LONG, PH.D.
Associate Professor of Pathology, University of Chicago
AND
FLORENCE B. SEIBERT, PH.D.
Instructor in Pathology, University of Chicago; Assistant in the Otho S. A. Sprague Memorial Institute
CHICAGO

One of the most impressive features of tuberculosis is the hypersensitiveness conferred on the infected man or animal. A familiar manifestation of this hypersensitive state is the inflammatory reaction of the tuberculous patient when tuberculin is injected into the skin. It must not be supposed, however, that this type of reaction is limited to the skin, or occurs only with those preparations commonly designated as tuberculins. To some degree all tissues are sensitized, and the living tubercle bacillus itself, like those extracts and other preparations called tuberculin, contains the peculiar substance to which the host is sensitive. Hence, every time the disease progresses within the body, bacilli escaping from an old focus in their spread lodge on sensitive soil, and are met with a typical tuberculin reaction.

It is no exaggeration to say that the histologic changes that characterize the morbid anatomy of tuberculosis are essentially the early or late manifestations of a series of tuberculin reactions, caused by a multiplying substance to which the host is hypersensitive. Moreover, directly or indirectly, the symptoms of the tuberculous patient may be referred to this series of tuberculin reactions. The manner in which such reactions favor absorption of poisons from the focus of disease, and hence produce symptoms, has been discussed in detail by Krause.[1]

THE NATURE OF THE TUBERCULIN REACTION

It is a striking fact that preparations of tuberculin, although exceedingly active with respect to the tuberculous animal, are quite without effect on the normal. Minute doses of the substance set up an acute inflammatory reaction of the type described below in the infected animal, man, cow or guinea-pig as the case may be, while doses a thousand times as large cause little or no change that can be recognized grossly or microscopically in the tissues of the normal animal. No explanation yet given for this striking difference in toxicity has met general acceptance. Some of the theories will be discussed below.

Although the explanation of the reaction is still unsettled, the tissue changes of the reaction are well understood in an objective way. There are two characteristic features, exudation and necrosis. The exudate that pours out consists of plasma and cells, and is associated with active hyperemia. The cells are chiefly large mononuclears, and when arranged in the characteristic architecture of the tubercle appear identical with the "epithelioid" cells. The nature of these cells which characterize the tubercle is being most actively investigated at the present time. By some, they are regarded

* Read before the National Tuberculosis Association, Minneapolis, June 19, 1925.
* Work done under a grant from the Medical Research Committee of the National Tuberculosis Association.
1. Krause, A. K.: The Constitutional Symptoms of Tuberculosis, New York M. J. **115**:441 (April 19) 1922.

as chiefly monocytes (the transitional cell of Ehrlich); by others, as a mixture of clasmatocytes, monocytes and lymphocyte derivatives, while others believe them to be derivatives of the capillary endothelium. For recent consideration of the relation of these different types of cell to the epithelioid cell of the tubercle the reader is referred to articles by Cunningham,[2] Maximow,[3] Foot,[4] Permar[5] and Lewis, Willis and Lewis.[6] A special significance of the rapid accumulation of such cells on reinfection of a tuberculous animal has been pointed out by Krause and Peters[7] and Krause and Willis,[8] who emphasize the mechanical localizing effect of the cellular reaction on the reinfecting bacilli.

Less investigation has been devoted to the other characteristic effect of tuberculin, the necrosis of the sensitized cells. This has been regarded by a number of workers as the result of an interaction between sensitized tissue, i. e., the tissue of an infected animal, and the active principle of tuberculin, whereby the latter is rendered toxic. This theory has been upheld by Nicolle[9] and Wolff-Eisner,[10] particularly. It classifies the tuberculin reaction as a lysin-endotoxin reaction, and resembles the concepts of Friedberger, Vaughan and Abderhalden on the nature of anaphylaxis.

Some support has been given to this explanation by the work of Bail,[11] who found that while tuberculin alone was not toxic for the normal animal, it became so if the crushed tissue from a tuberculous animal was injected into the normal animal simultaneously with the tuberculin. Kraus, Loewenstein and Volk,[12] Selter,[13] Klopstock[14] and others could not confirm this.

Experiments in our laboratory also have failed to confirm this theory. Our results in this connection may be thus summarized: The testis of the tuberculous guinea-pig is highly sensitive to the action of tuberculin.[15] Profound degeneration or necrosis results when small amounts of tuberculin are injected. Were this necrosis the result of interaction between the sensitized testis cells and tuberculin, it might be expected that if tuberculin and the crushed testis of a tuberculous animal were intimately mixed for a few hours, one of two results might follow. The tuberculin might be activated by the sensitized tissue so as to become poisonous (compare the theory of Vaughan on the production of poisonous products of protein cleavage, and Friedberger's anaphylatoxin), and thereby act injuriously on normal tissue; or the tuberculin might be so bound by the sensitized tissue that the expressed fluid from such a mixture would fail to elicit a tuberculin reaction in a tuberculous guinea-pig.

As a matter of fact, neither of these possible results occurred. In several trials, the crushed testis of a tuberculous guinea-pig (0.8 c.c.) and old tuberculin (0.2 c.c.) were mixed and incubated for six hours with repeated shaking. The mass was then sedimented and the supernatant fluid injected into the testes of normal and tuberculous guinea-pigs. No reaction whatever developed in the testis of the normal animal, while a typical testis tuberculin reaction[16] followed in the tuberculous pig. Identical results were secured when the ground skin of a tuberculous animal was substituted for the testis. Tuberculin was apparently neither activated nor bound by the sensitized tissue.

These results have been criticized on the ground that correct quantitative relations between sensitized tissue and tuberculin might not have been observed, and it has been suggested that a much higher proportion of sensitive tissue be used. The justice of the argument is recognized, and present results are admitted to be inconclusive. Heretofore it has not been possible to measure the effect of tuberculin quantitatively, but a method based on the spermatocyte reaction,[16] which will permit fairly accurate measurement, has just been devised, according to which the experiments described above will be repeated. The experiments described, even if they might not give evidence of the binding of a small amount of the tuberculin by the testicular tissue, have at least this value—the conversion of even a very small amount of tuberculin into a substance toxic for normal tissue would certainly have been detected, for the testis reaction used in the detection is very delicate.

These results are in agreement with those of Selter,[17] who has repeatedly asserted that tuberculin is a specific irritant for the sensitized cell, which poisons the cell without, however, being bound by it. Selter's analysis of the tuberculin reaction is a statement of our ignorance of the true nature of the reaction rather than an explanation of it. And probably his view is the safest one to take at present.

THE NATURE OF TUBERCULIN[18]

Large quantities of a special tuberculin suitable for chemical investigation have recently been made available through the cooperation of the H. K. Mulford Company, Parke, Davis & Co., and the National Tuberculosis Association. A virulent tubercle bacillus (H_{37} of the Saranac Laboratory) has been grown on a medium devised by Long,[19] which has the following composition: asparagin, 5; ammonium citrate, 5; potassium acid phosphate, 3; sodium carbonate (dry), 3; sodium chlorid, 2; magnesium sulphate, 1; ferrous ammonium citrate, 0.05; glycerol, 50; water, 1,000. The composition is such that the medium is well buffered and requires no neutralizing or other titration. Luxuriant growth occurs in three to four weeks. The clear filtrate, after the bacilli have been removed, has been used for the preparation of highly potent dry

2. Cunningham, R. S.: The Physiology of the Endothelial Cell, Especially Its Permeability Under Normal and Pathologic Conditions, Am. Rev. Tuberc. **9**: 491-506 (Aug.) 1924.

3. Maximow, A. A.: Tuberculosis of Mammalian Tissue in Vitro, J. Infect. Dis. **34**: 549 (June) 1924.

4. Foot, N. C.: Studies on Endothelial Reactions, II, The Endothelial Cell in Experimental Tuberculosis, J. Exper. Med. **32**: 513 (Nov.) 1920.

5. Permar, H. H.: The Function of the Endothelial Cell in Pathological Conditions, Especially in Tuberculosis, Am. Rev. Tuberc. **9**: 507-518 (Aug.) 1924.

6. Lewis, M. R.; Willis, H. S., and Lewis, W. H.: The Epithelioid Cells of Tuberculous Lesions, Bull. Johns Hopkins Hosp. **36**: 175-185 (March) 1925.

7. Krause, A. K., and Peters, Dorothy: Studies on Immunity to Tuberculosis: A Description of Graphic Records of the Local Allergic and Immune Reactions to Tuberculous Reinfection in Guinea-Pigs, Am. Rev. Tuberc. **4**: 551-561 (Oct.) 1920.

8. Krause, A. K., and Willis, H. S.: The Rate of Dissemination of Tubercle Bacilli in Normal and Immune Guinea-Pigs, Bull. Internat. Union Against Tuberculosis **1**: No. 3, 1924.

9. Nicolle, M., and Abt, G.: Une conception générale des anticorps et de leurs effets, Ann. de l'Inst. Pasteur **22**: 132-171, 1908.

10. Wolff-Eisner, A.: Ueber die Beziehungen zwischen der Theorie der Tuberkulinwirkung und der Tuberkulintherapie, Berl. klin. Wchnschr. **47**: 1651 (Sept. 5) 1910.

11. Bail, O.: Weitere Versuche betreffend die Uebertragung der Tuberkulinempfindlichkeit, Ztschr. f. Immunitätsforsch. u. exper. Therap. **22**: 451-466, 1912.

12. Kraus, R.; Loewenstein, E., and Volk, R.: Zur Frage des Mechanismus der Tuberkulin Reaktion, Deutsch. med. Wchnschr. **37**: 389-391 (March 2) 1911.

13. Selter, H.: Ueber das Wesen der Tuberkulinreaktion, Ztschr. f. Immunitätsforsch. u. exper. Therap. **32**: 325-354, 1921.

14. Klopstock, F.: Zur Uebertragung der Tuberkulinempfindlichkeit, Ztschr. f. Immunitätsforsch. u. exper. Therap. **40**: 27-33, 1924.

15. Long, E. R.: Tuberculosis Reinfection and the Tuberculin Reaction in the Testicle of the Tuberculous Guinea-Pig, Am. Rev. Tuberc. **9**: 215-253 (May) 1924.

16. Long, E. R.: The Standardization of Tuberculin: Assay on the Basis of the Spermatocyte Reaction, to be published.

17. Selter, H.: Tuberculoseimmunität, Tuberkulinempfindlichkeit, tuberkulöse Allergie, München. med. Wchnschr. **71**: 462 (April) 1924.

18. The Experiments reported in brief here will be described in detail in a series of articles which will appear shortly in the American Review of Tuberculosis.

19. Long, E. R.: A Review of Some Recent Studies on the Metabolism of the Tubercle Bacillus and on the Nature of Tuberculin, Tubercle **6**: 128-140 (Dec.) 1924.

products separated from all the original constituents of the medium.

Experiment, many times repeated, has shown that when this tuberculin is suspended in dialyzing parchment or an animal membrane, the active principle does not dialyze out. All the original constituents of the medium dialyze readily, and can be detected in the dialysate, but the substance which elicits the tuberculin reaction remains within the dialyzing sac. In a few instances, slight escape of the active principle was indeed observed, but it is significant that the better the grade of dialyzing membrane the less likely this was to occur. We are therefore inclined to attribute the occasional results of others, indicating that the substance does dialyze, and the very few similar results of our own, to actual leakage of the dialyzing membranes.

The substance is thus to be considered a colloid or as something firmly adsorbed by a colloid. In the light of the second possibility, an attempt has been made to bind the active principle by a known effective adsorbent. Tuberculin, prepared from the medium described above, was treated with animal charcoal for several days. The mixture was then filtered and the charcoal well washed. The filtrate remained a highly potent tuberculin, and alkaline extraction of the washed charcoal failed to liberate any potent tuberculin whatever. These results indicate that if the substance was in an adsorbed combination, charcoal failed to free it; or, on the other hand, that it might be a colloid itself, not adsorbable, at least under the conditions of the experiment.

The nondialyzing colloid which shows tuberculin activity is of protein nature. Tuberculin, prepared from the medium described above, originally protein-free, invariably contains protein after a few weeks' growth of the bacillus. If this protein is the active principle itself, proteolytic ferments should destroy the activity. If, on the other hand, the active principle is merely adsorbed by protein and is not protein itself, destruction of the protein by ferments should not impair the activity of the preparation. As a matter of fact, the action of trypsin in a few days reduced the activity of such preparations to almost zero. This result confirms that of a large number of other investigators who have digested tuberculin, and strongly suggests, if it does not prove, that the substance which is active actually is protein.

Various methods of protein precipitation applied to this tuberculin have resulted in the isolation of protein products that elicit the tuberculin reaction. Moreover, special fractioning methods have led to the separation of active and inactive proteins.

The first precipitating method applied, and the easiest, was simple precipitation with acetic acid. The isoelectric and maximum precipitating point, obtained through the cooperation of Dr. I. S. Falk of the University of Chicago, proved to be p_H 4.0, a figure agreeing closely with that obtained by Gabbe [20] for an active substance obtained from tubercle bacilli and from old tuberculin. However, even at this reaction, precipitation of the active principle was never complete. The filtrate, on neutralization, invariably gave a tuberculin reaction. Furthermore, at no other concentration of acetic acid was it possible to secure complete precipitation. Hence this method, of which so much was hoped because of its easy application and the readiness with which the product could be centrifugalized, washed and dried, was finally discarded.

20. Gabbe, E.: Ueber das Flockungsoptimum des durch Essigsäure fällbaren Substanz des Tuberkulins, Biochem. Ztschr. **141**: 523-531, 1923.

Of a number of other methods tried, precipitation with ammonium sulphate proved the most effective, and also the most laborious. Complete saturation with ammonium sulphate completely precipitates the active principle and all the protein. The filtrate from the precipitate, dialyzed free from ammonium sulphate, even when much concentrated, fails to elicit a tuberculin reaction in a tuberculous guinea-pig, while the precipitated product, when w[illegible], dialyzed and dried, even in minute quantities, gives a marked tuberculin reaction.

This product is susceptible, however, of further purification. In brief, it may be separated into three protein fractions: (1) a water-soluble, heat coagulable protein; (2) a noncoagulable, alkali soluble, water-insoluble protein, and (3) a noncoagulable, water-soluble protein. The first of these possesses moderate activity, the second little, if any, and the third, marked potency. One ten thousandth milligram gives a strong tuberculin reaction in the testis of a tuberculous guinea-pig.

We are unable as yet to state whether the proteins so obtained are identical with the proteins of the tubercle bacillus, long known to be potent as tuberculin, or whether they represent a special secreted product. Our results await comparison with those of Johnson and Coghill, who are isolating proteins from the tubercle bacilli filtered from the same tuberculin.

Our results favor the view that the active principle of tuberculin is itself a protein, and confirm the results of others [21] who have reached the same conclusion.

SUMMARY

The active principle of tuberculin is nondialyzable; is not absorbed by animal charcoal; is destroyed by trypsin; is maximally but incompletely precipitated by acetic acid at p_H 4.0, and is completely precipitated by saturation with ammonium sulphate. The product precipitated by ammonium sulphate is of protein nature, and can be separated into three protein fractions, (1) a water-soluble heat coagulable protein; (2) a noncoagulable, alkali soluble, water-insoluble protein, and (3) a noncoagulable, water-soluble protein. Of these, the first and third appear to be the most potent.

The nature of the highly specific toxic action of this substance on the tissues of a tuberculous animal is not known. Preliminary experiments indicate that the tissues of the sensitized (tuberculous) animal do not act on tuberculin in such manner as to render it toxic for normal animals, nor do they bind the active principle in appreciable quantity, so as to render a tuberculin preparation less toxic for another tuberculous animal.

21. A summary of the literature is given by Wells, H. G.; DeWitt, Lydia; and Long, E. R.: The Chemistry of Tuberculosis, Baltimore, Williams and Wilkins, 1923.

Bio-Assay of Thyroid.—It is suggested that the assay of thyroid be based primarily on the iodin content (the U. S. P. standard of 0.2 per cent. has been found feasible and satisfactory in the United States); that simple chemical tests be included for the detection of nonthyroid iodin; that in cases in which a physiologic test is desirable the acetonitril test as modified by Straub is recommended, but that the dosage be based on the iodin content of the preparation to be examined; that the standard be a preparation of thyroid of known origin containing 0.2 per cent. of iodin; that physicians be urged to use thyroid of known iodin content, and that they be requested to collect further data on the relation between the iodin content of the different samples of thyroid and their effect on the basal metabolism in cases of hypothyroidism.—Hunt, Reid: *Pub. Health Rep.* **40**:1466 (July 10) 1925.

CURVE OF INORGANIC BLOOD PHOSPHATES DURING THE SUGAR TOLERANCE TEST

SIGNIFICANCE IN DIAGNOSIS AND PROGNOSIS *

F. W. HARTMAN, M.D.
AND
ADOLPH BOLLIGER, PH.D.
DETROIT

The discovery of insulin has centered the attention of investigators and clinicians on the treatment of abnormal carbohydrate metabolism somewhat to the exclusion of further refinements in the diagnosis of this condition. The work of Sherrill [1] brings out the importance of early diagnosis and shows how this may be accomplished through the use of the alimentary glucose tolerance test in obesity and in the families of diabetic patients. John [2] points out that, making allowance for such border-line conditions as renal glycosuria, toxic and infectious states and endocrine disorders, the simple glucose test reveals many early and latent cases of diabetes in which prophylactic measures are of value. Olmsted and Gay [3] emphasize all the various factors concerned in the duration of hyperglycemia after the standardized Janney glucose tolerance meal and the fact that each of these should be considered in the interpretation of blood glucose curves. Rigler and Ulrich,[4] reviewing the literature on the alimentary glucose tolerance test, feel that it is objectionable chiefly because of the great variability in the gastro-intestinal absorption time, rendering it inaccurate and misleading. They recommend, in lieu of the alimentary test, the continuous administration of glucose with blood examinations at intervals following. Tannhauser and Pfitzer [5] show that, even when the glucose is administered in this manner, the liver plays an important rôle in shaping the curve, since they demonstrated that the most abnormal curves were produced in diseases of the liver. These differences are probably caused by defective storage capacity, since similar abnormal curves have been observed by us in cases in which replacement or destruction of liver tissue was extensive, as chloroform poisoning, primary carcinoma of the liver, and multiple pyogenic and amebic abscesses.

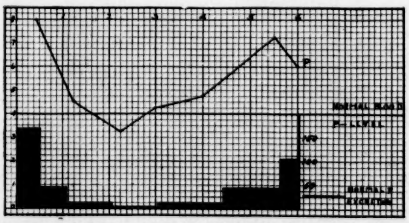


Chart 1 (Normal dog).—Utilization of inorganic phosphates after intravenous injection of 600 mg. of phosphates adjusted to p_H 7.0, with 100 units of insulin.

Although the nature of the relation between carbohydrate and phosphate metabolism is yet to be established, the fact that there is such relation is demonstrated in the work of Harrop and Benedict,[6] Kay and Robinson,[7] Wigglesworth, Woodrow, Smith and Winter,[8] Briggs, Koechig, Doisy and Weber,[9] Perlzweig, Latham and Keefer,[10] Blatherwick, Bell and Hill,[11] Allan, Dickson and Markowitz [12] and others.

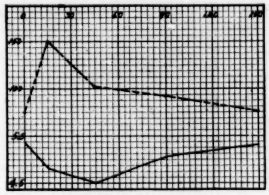


Chart 2 (T. W., aged 27).—History and physical examination essentially negative; 35 gm. of glucose by vein.

Confirmation of this relation, and additional facts regarding the inorganic phosphates of the blood during carbohydrate metabolism, were given in a previous communication,[13] thus summarized:

In the partially depancreatized dog and the diabetic patient of the milder type, the curve of inorganic phosphates is depressed more gradually and the depression lasts longer than in the normal individual. This variation of the blood phosphate curve is even more apparent than the variation from normal in the corresponding blood sugar curve. The more severe the diabetic state, the greater is the effect on the carbohydrate phosphate metabolism, and the level of blood phosphates approaches a straight line drawn parallel with the base line. The demand for inorganic phosphates is apparent only when pancreatic hormone is available and carbohydrates are being utilized. It is unlikely that this utilization takes place in the liver, since it was observed to take place after medullary puncture and in animals whose livers had been reduced to a functionless mass of fat.

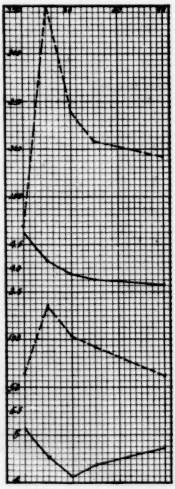


Chart 3 (F. A., aged 25).—Fracture of skull: (*a*) 25 gm. of glucose twelve hours after accident; (*b*) 25 gm. of glucose fourteen days after accident.

The distribution of inorganic phosphates in the body, after the administration of insulin and glucose, has been studied by Harrop and Benedict.[6] They found a decrease in the blood and an increase in the muscles, and at the same time a depressed excretion.

The utilization of inorganic phosphates was studied in two groups of experiments after

* From the Laboratories of the Henry Ford Hospital.
* Read before the Section on Pathology and Physiology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Sherrill, J. W.: Diagnosis of Latent or Incipient Diabetes, J. A. M. A. **77**: 1779 (Dec. 3) 1921.
2. John, H. T.: J. Metabol. Res. **1**: 498 (April) 1922.
3. Olmsted, W. H., and Gay, L. P.: Study of Blood Sugar Curves Following a Standardized Glucose Meal, Arch. Int. Med. **29**: 384 (March) 1922.
4. Rigler, L. G., and Ulrich, H. L.: Blood Sugar Reaction Following Intravenous Injection of Glucose, Arch. Int. Med. **32**: 343 (Sept.) 1923.
5. Tannhauser and Pfitzer: München med. Wchnschr. **9**: 2155, 1913.
6. Harrop, G. A., Jr., and Benedict, E. M.: J. Biol. Chem. **59**: 683 (April) 1924.
7. Kay, H. D., and Robinson, R.: Biochem. J. **18**: 1139, 1924.
8. Wigglesworth, V. B.; Woodrow, C. E.; Smith, W., and Winter, L. J.: J. Physiol. **57**: 447 (Aug.) 1923.
9. Briggs, A. P.; Koechig, J.; Doisy, E. A., and Weber, C. J.: J. Biol. Chem. **58**: 721 (Jan.) 1924.
10. Perlzweig, W. A.; Latham, E., and Keefer, C. S.: Proc. Soc. Exper. Biol. & Med. **21**: 33, 1923-1924.
11. Blatherwick, N. R.; Bell, M., and Hill, E.: J. Biol. Chem. **61**: 241 (Aug.) 1924.
12. Allan, F. N.; Dickson, B. R., and Markowitz, J.: Am. J. Physiol. **70**: 333 (Oct.) 1924.
13. Bolliger, A., and Hartman, F. W.: J. Biol. Chem. **63**, May, 1925.

the administration of phosphates and insulin. In the first group of experiments (of which Chart 1 is a typical example) dogs whose level of blood phosphates and phosphate excretion had been established during the preceding twenty-four hours were given phosphates intravenously along with large doses of insulin. The immediate increase in the blood phosphates (shown as a solid line) and the phosphate excretion after the injection is followed by a sharp fall well below the normal level in the blood and a reduction to one fifth of the normal excretion in the urine at the end of two hours and fifteen minutes. From this point there is gradual increase in the blood phosphates along with increased excretion in the urine up to the end of a six hour observation period.

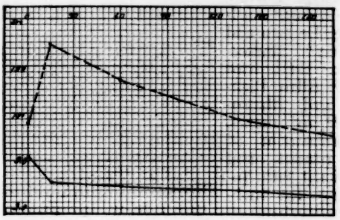


Chart 4 (J. W., aged 40).—Treated diabetic patient with cataract; 35 gm. of glucose by vein.

Increase of Inorganic Phosphates in Liver Under Insulin

Rabbit No.	Weight, Kg.	Time	Blood		Muscles		Comment
			Sugar	Phosphate	Total Increase Phosphate per 100 Gm.	per 100 Gm.	
1	1.9	8:40	96	3.46	155	..	122 mg. P; 30 units insulin; slight convulsions
		9:50	18	8.06	182	27	
2	1.1	2:30	141	3.70	165	..	88 mg. P; 20 units insulin; quiet
		3:30	44	8.40	188	23	
3	3.1	2:45	118	3.56	175	..	132 mg. P; 20 units insulin; quiet
		3:45	54	6.66	192	17	

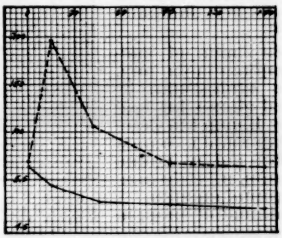


Chart 5 (M. M., aged 57).—Hypertension, furunculosis and bronzed skin: 35 gm. of glucose by vein; phosphate curve more consistent with clinical picture than sugar curve.

The second group of experiments includes the injection of phosphates and insulin intravenously in rabbits, with examination of the muscle for the total phosphate content one hour after the injection. The results are given in the accompanying table. The muscle analyses previously described were done on the living animal without anesthesia. During the excision under these conditions there is necessarily a maximum muscular activity on the part of the animal, with resultant utilization of carbohydrates and the return of the phosphates to the blood. In our experiments the tissue was excised fifteen minutes after the induction of spinal anesthesia, so that muscular activity was reduced to a minimum. The increases in the phosphate content of the muscles are large when we consider that the muscles constitute two fifths of the entire body weight. The phosphate increases in the blood are negligible as compared with those in the muscles, since the blood comprises only one twelfth of the body weight. From these two groups of experiments it is evident that the immediate fate of inorganic phosphates under insulin is comparable to that of glucose under insulin. The principal exception to this similarity was shown in a recent work of Cori and Goltz [14] when they demonstrated that the increase of inorganic phosphates in the liver under insulin is exceedingly small.

In view of these findings, it seemed of interest to follow the curve of inorganic phosphates of the blood as well as the blood sugar curve after the injection of glucose. This was done without selection on our part.

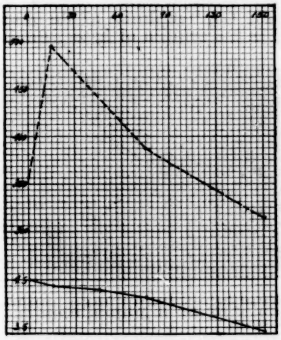


Chart 6 (E. W., aged 52).—Diabetic patient with myocarditis and obesity: 35 gm. of glucose by vein.

Both analyses were done in those cases in which sufficient blood was available. The work includes the study of some sixty cases, and the curves may be divided into seven groups: (1) those showing normal carbohydrate metabolism; (2) those showing slightly abnormal carbohydrate metabolism; (3) those showing moderately abnormal carbohydrate metabolism; (4) those showing markedly abnormal carbohydrate metabolism; (5) those showing complete absence of pancreatic hormone; (6) those showing abnormal carbohydrate metabolism related to the pituitary, and (7) those showing abnormal carbohydrate metabolism related to the suprarenals.

In the first group—those cases showing normal carbohydrate metabolism—the phosphate curve shows a marked depression with the lowest point being reached within one hour after the injection and a return to normal (Chart 2).

In the second group—those showing slightly abnormal carbohydrate metabolism—the curve of inorganic phosphates is depressed at about the same rate and to about the same depth as in the normal individual but it reaches its lowest point only after one and a half hours, with a subsequent return to normal. This curve

14. Cori, C. F., and Goltz, H. L.: Am. J. Physiol. 72: 256, 1925.

is well illustrated in a dog after medullary puncture and in a human being after head injury.[15] They doubtless represent a temporary defect in the storage capacity of the liver (Chart 3).

In the third group — moderately abnormal carbohydrate metabolism—were cases showing a gradual depression which reaches its deepest point two and one half hours after the injection of glucose, which may or may not return to normal during the period of observation (Charts 4 and 5).

In the fourth group—markedly abnormal carbohydrate metabolism—the curve of inorganic phosphates shows a gradual straight line descent or a sudden depression, and then a straight line curve running parallel with the base line with no tendency toward recovery during the period of observation (Chart 6).

In the fifth group—complete absence of pancreatic hormone—the curve of inorganic phosphates shows no alteration from the starting point, and the observations are plotted on a straight line parallel with the base line (Chart 7).

In the sixth group—abnormal carbohydrate metabolism related to the pituitary—it has been shown by Burn [16] that insulin is a direct antagonist of pituitary extract as regards the effect on sugar metabolism. A similar observation was made in our previous communi-

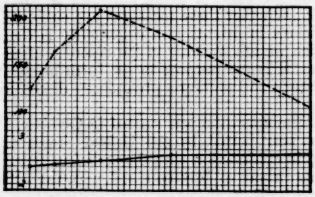


Chart 7 (C. S., aged 46).—Diabetic patient with high carbon dioxid content of blood and edema succumbing to carbuncle and septicemia six weeks after sugar tolerance test: 35 gm. of glucose by vein.

cation as regards inorganic phosphate metabolism. These variations are well illustrated after the simultaneous injection of insulin and pituitary extract, resembling the curves of inorganic phosphates in the case of pituitary tumor. That is, with the elevation of the blood glucose there is an elevation of the blood phosphates, the peak lagging somewhat behind the peak of the glucose curve (Chart 8).

In the seventh group—abnormal carbohydrate metabolism as related to the suprarenals—the effect of epinephrin on blood phosphates has been studied by Perlzweig, Latham and Keefer.[16] In our previous observation [13] it seemed that the depressions in the blood phosphates were greatly exaggerated by epinephrin, as compared with the curve following insulin or glucose administration. However, in the depancreatized animal the administration of epinephrin alone did not affect the blood phosphates, so that we were in agreement with Allen, Dickson and Markowitz that insulin and epinephrin are not antagonistic. The curve in the human case is represented by a girl, aged 19, with a tentative diagnosis of Raynaud's disease. The sugar curve is somewhat abnormal, but the phosphate curve shows the same characteristics as those after the administration of epinephrin (Chart 9).

15. Allen, C. L., and Davidson, E. C.: Bull. Johns Hopkins Hosp., to be published.
16. Burn, J. H.: J. Physiol. **57**: 318 (June) 1923.

METHODS

For blood sugar determinations, the method of Folin and Wu [17] was used. For inorganic phosphates, the recent method of Benedict [18] was used. Most of the glucose was given intravenously in amounts varying from 25 to 50 gm. A few patients received glucose by mouth. The amount and method of administrating the glucose has little effect on the phosphate curve except

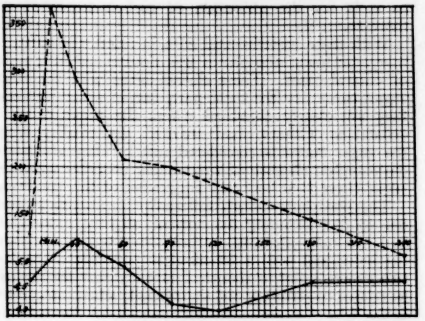


Chart 8 (S. E., aged 45).—Pituitary tumor confirmed by operation: 35 gm. of glucose intravenously.

that the lowest point is reached a half hour later when administered by mouth. The uniformity is due to the fact that the liver is little concerned. Intravenous injection of 0.1 gm. of glucose per kilogram of body weight in a dog gives only a slight variation in the sugar curve, but a typical phosphate curve. In continuation of this work, a series of patients will be studied, a small dosage of glucose being used.

COMMENT

Few refinements in the diagnosis of abnormal carbohydrate metabolism have been made since the introduction of the Janney [19] glucose tolerance meal. The

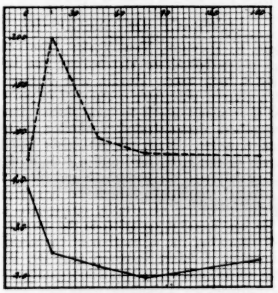


Chart 9 (R. B., aged 19).—Clinical diagnosis, Raynaud's disease: 25 gm. of glucose by vein.

intravenous administration advocated by Rigler and Ulrich is now widely used, but even with this the blood glucose curves, especially in the early or doubtful cases,

17. Folin, Otto: Laboratory Manual of Biological Chemistry, Ed. 3, 1922, pp. 229-291.
18. Benedict, S. R., and Theis, R. C.: J. Biol. Chem. **61**: 63 (Aug.) 1924.
19. Janney, N. W., and Isaacson, V. T.: Blood Sugar, J. A. M. A. **70**: 1131 (April 20) 1918.

are difficult to classify. This difficulty is, we believe, largely due to the fact that the liver may play a greater or lesser rôle.

It has been shown that the effect of pancreatic hormone on inorganic phosphate metabolism is comparable to that on carbohydrate metabolism reducing the blood content and urine excretion, with a correspondingly increased amount in the muscles. Further, the presence of insulin is as essential for the utilization of phosphates as it is for the utilization of carbohydrates, if not more so.

With these experimental data in mind, the curve of inorganic blood phosphates was determined in a series of clinical cases. These curves agree with the blood sugar curve for the most part, but in some instances they are clearly abnormal where the sugar curve is debatable. Others show marked abnormality when the sugar curve is considered mild. They also show the complete absence of functioning pancreas when the sugar curve is at best only suggestive of this condition.

The phosphate curves fall easily into seven groups, one to five including the normal, slightly, moderately and markedly abnormal carbohydrate metabolism, and the individual with a functionless pancreas. The last two groups point to abnormal carbohydrate metabolism as related to pituitary and suprarenals when interpreted in the light of experiments with extracts of these glands.

The curves may be considered as only suggestive after application to such a small series of patients, and the groupings will doubtless be modified in the observations of larger series.

SUMMARY

1. The effects of insulin on phosphate utilization are comparable to those on carbohydrate utilization.
2. Abnormal carbohydrate metabolism may be divided into seven groups by means of the blood phosphate curve.
3. Slight abnormalities and the functionless pancreas are readily identified through the phosphate curve.
4. Abnormal carbohydrate metabolism associated with the pituitary, and possibly with the suprarenals, may be recognized.

ABSTRACT OF DISCUSSION

DR. ROGER R. HANNON, New York: The relation of the phosphates to carbohydrate metabolism has been of great interest for a long time. Hardin and Young showed that there was a glucose-phosphate compound in yeast which must be present if fermentation is to take place. Emden, Laquer, Euler and others demonstrated a similar compound in all mammalian muscles. Many physiologists consider this as the precursor of the lactic acid and a source of energy. Dr. Hartman has followed the phosphate and blood sugar curves in these clinical conditions which he has mentioned, and following the injections of insulin, epinephrin and pituitary extract. He has found a variation in the curves which seems to parallel somewhat the utilization of carbohydrate and the effect of insulin. I think, however, that Dr. Hartman must realize that when he deals with an inorganic radical like the phosphate radical, he is dealing with only one factor in a very complex physicochemical system. We believe that the phosphates play a part in the acid-base balance, in calcium metabolism, etc. We think that there is a disturbance in the protein, and in the fat metabolism when there is a disturbance of the carbohydrate metabolism. The point to consider is whether the relation brought out by Dr. Hartman is a direct or an indirect relation, a direct or an indirect effect of the insulin. One can hardly say from the data that he has given what the mechanism is. With regard to his results with insulin, it seems to be a direct effect, possibly through storage or through utilization. From our present knowledge of the action of epinephrin, it is supposed to mobilize glucose, and yet he gets a similar depression of the phosphate curve as with insulin. Thus, it may follow more closely the utilization of glucose. McCann and Lyman have followed the blood sugar curves and respiratory quotient curves following the administration of glucose, insulin and epinephrin. This is also a valuable test for disturbances of carbohydrate metabolism. I think Dr. Hartman's results are important, and can be used clinically when a careful study of the carbohydrate metabolism is desired.

DR. F. W. HARTMAN, Detroit: Many of the points brought up by Dr. Hannon are now under investigation; but, with the data at hand, it does seem that whether the effect on the phosphorus curve is a direct or indirect one, this may develop into a helpful diagnostic measure, especially if taken in conjunction with the blood sugar curve.

THE CONTROL OF RICKETS

PRELIMINARY DISCUSSION OF THE DEMONSTRATION IN NEW HAVEN *

MARTHA M. ELIOT, M.D.
NEW HAVEN, CONN.

That animals can be protected against rickets by the use of cod liver oil and ultraviolet rays is an established fact. It has also been clearly shown that cod liver oil and sunlight exert a great influence in the cure of rickets. Whether these measures are sufficient to prevent rickets in infants in a community is the problem on which we are working in the demonstration in New Haven. It is my purpose to set forth briefly the plan of the study and to offer a preliminary discussion of the results.

The demonstration was started in October, 1923, for a three year period by the United States Children's Bureau in conjunction with the pediatric department of the Yale School of Medicine and with the active cooperation of the local health organizations.[1] A district of the city was selected having a population of approximately 13,500, one third of which were negroes, and two thirds a mixed population composed of Italians, Irish, Polish and Americans. The office of the demonstration is known in New Haven as the "Children's Bureau." The staff consists of three physicians, three public health nurses, two social investigators, a roentgen-ray technician and a secretary. The staff is necessarily large in order that the records may be complete and accurate.

The main problem of the investigation was to show whether rickets could be prevented in a community by the intensive use of cod liver oil and sunlight. The infants born within the selected district during the first two years of the study are examined and started on cod liver oil and sunbaths, if possible, before the end of the first month of life. They are brought to the Children's Bureau once a month for physical and roentgen-ray examinations in order that rickets may be discovered as early as possible and intensive treatment instituted if necessary. The nurses visit the homes frequently to see whether the instructions are being carried out. In order to provide control material for the investigation, it was necessary to take for examination the children under 5 years of age living in the

* From the United States Children's Bureau and the Pediatric Department of the Yale School of Medicine.

* Read before the Section on Diseases of Children at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. New Haven Health Department, New Haven Medical Association, Department of Public Health Yale School of Medicine, and the Visiting Nurse Association.

district at the time when the demonstration started. Later, however, it became clear that it was even more important to have for comparison a group of infants who were born during the period of the demonstration, but who had received no cod liver oil and concerning whom no instructions regarding sunlight had been given. Examination of such a control group was begun at the end of the first year of the demonstration and has continued throughout the past winter. The infants of this group correspond in age to those in the district who are being given antirachitic treatment.

The daily routine in the demonstration is comparatively simple. The birth certificates of babies born in the district are sent to the Children's Bureau office by the board of health. If the certificate is signed by a local physician, a call is made by one of the Children's Bureau physicians, to explain to him the purpose of the demonstration and to ask his cooperation. If the physician has already been seen, a letter is written telling him that the birth certificate has been sent to the Children's Bureau, and that the mother will be urged to bring the baby for examination. No new baby is brought to be examined without the knowledge and consent of the family physician. When the nurse takes the birth certificate to the mother, she has an opportunity to tell the mother about the Children's Bureau, and to make an appointment for the baby to be examined as soon as the mother is able. At the first visit the baby is weighed, measured and examined thoroughly. At this visit, also, a roentgenogram is taken of the bones of both forearms. A uniform technic in taking the roentgenograms is used for all babies, so that the films may be compared satisfactorily with one another. Before leaving, the mother is given general advice by the physician with regard to routine feeding and care of the baby. She is instructed to give both cod liver oil and sunbaths to the baby, and is asked to bring him back once a month for physical and roentgen-ray examinations.

The importance of teaching the mother how to give the cod liver oil to the baby cannot be overemphasized. Success in the administration of cod liver oil to babies depends on two things: the method used, and the ability of the physician or nurse to convince the mother of the value of the cod liver oil. An actual demonstration of the best method of administration is given to each mother by one of the nurses. With the baby lying across her lap, the nurse pours out the proper dose in a spoon held in her right hand. With her left hand she opens the baby's mouth by pressing the cheeks together between her thumb and fingers. The oil may then be poured little by little into the baby's mouth. If the mouth is not held open until the oil entirely disappears, the baby will spit out what is left. When this happens, the mother very frequently reports that the baby has vomited the oil. It is frequent for infants to spit out oil not yet swallowed, but in only a few instances have we found that the infant actually vomits it. Attempts to disguise the taste of the oil for very young babies are unnecessary. If by the fifth or sixth month the baby begins to object to the cod liver oil, it may be given with orange juice. Some babies may be taught to take it through a large rubber nipple or from a bottle. In the latter case, more oil than is desired for a single dose must be put into the bottle to allow for that which will adhere to the glass. The addition of a little molasses or honey to the spoonful of cod liver oil will sometimes disguise the flavor for older children. Most babies and little children can be taught to take the pure oil, if it is looked on with favor by the mother and no unpleasant associations are attached to it. Many children who are given cod liver oil from the earliest months of infancy like it and even "cry for it." Others have to be taught to take it.

At the beginning of the demonstration it was believed that from 10 to 20 drops of pure cod liver oil given twice a day was sufficient to protect very young infants from developing rickets. Within a very few months, however, it was found that infants taking this amount more or less regularly showed roentgen-ray evidences of early rickets. Moreover, it was found that if the oil was once measured in drops, the mothers were loathe to give it later by the teaspoonful. The following routine therefore has been followed for the last sixteen months. Babies seen before the end of the first month of life are given one-half teaspoonful of pure cod liver oil twice a day. During the second month the dose is gradually increased to 1 teaspoonful twice a day. If the roentgenogram shows any progress in the rachitic process, this dose is again increased so that it amounts to 1½ teaspoonfuls twice a day or even 1 dessertspoonful twice a day by the end of the third or fourth month. It has been found that this amount of cod liver oil is well tolerated by babies and that it can be successfully given in summer as well as in winter. During the hot summer months, the oil is best given in the early morning and at night. The bottle of oil should be kept cool.

Demonstrations of the sunbaths are given by the nurses at their visits to the homes. If the baby is fortunate enough to have been born between the first of March and the first of September, sunbaths are started outdoors before the end of the first month of life. If the baby is born in the winter months, the sunbaths frequently must be given indoors inside an open sunny window. At whatever season the baby is born, however, the mother is impressed with the importance of direct sunbaths. She is taught that the full value of the sun's rays is obtained only when they reach the skin without the intervention of clothing or window glass.

When outdoor sunbaths are given, the hands and face are exposed first for ten or fifteen minutes only. After the first few days other parts of the body, at first the arms and a little later the legs, are in turn exposed to the sun. The period of exposure is increased two or three minutes daily. The increase for infants with dark skins may be more rapid than for infants with fair skins. As the weather gets warmer, the arms and legs and in time the whole body may be exposed together. As the baby becomes accustomed to the sunbath, the period is lengthened to one hour twice daily. Care must be taken to increase the length of the sunbath gradually, so as not to burn the skin. Sufficient exposure daily to produce slight reddening will gradually tan the skin. Pigmentation is the outward evidence that the ultraviolet rays of the sunlight are effective. It is important, too, in the intense heat of July and August, that the sunbaths should be given before 10 o'clock in the morning and after 3 o'clock in the afternoon. The baby's head at this season should be protected from the sun between these hours. Graduated outdoor sunbaths, such as are here described, may be given to any baby 3 or 4 weeks old who is born in the spring and summer.

In our northern climate it is possible to give outdoor sunbaths to healthy infants even in the winter. Feeble and premature infants cannot, of course, be exposed outdoors in winter. It is well known that the

temperature on a cold day may be 40 or 50 degrees higher in the direct sunlight than it is in the shade. The heat of the sunlight, which we would so gladly dispense with in July and August, must be utilized in winter to its greatest extent. The baby born in the fall or winter may be given outdoor sunbaths except on days when the temperature is below freezing. Many mothers, however, prefer to give indoor sunbaths to young babies. These may be satisfactorily given in front of an open sunny window, preferably facing southeast to get the morning sun. The room should be warmed and the doors closed to avoid drafts. The window may be opened either at the top or at the bottom, but it is necessary that the baby lie in the patch of sunlight coming through the open space. These indoor winter sunbaths should preferably be given between 10 and 1 o'clock when the ultraviolet content of the sunlight is most intense. Increase in the amount of skin surface exposed and the length of exposure should be gradual; but, in time, the face, arms and legs may be slightly tanned, even in winter. It may not be possible to expose the whole body. Babies who are given indoor sunbaths in winter may begin outdoor sunbaths early in the spring, so that they will be well tanned by the end of April.

For the last eleven months a mercury vapor quartz lamp has been used as an additional means to control the rickets in those cases in which the roentgen ray

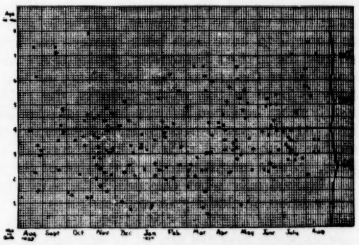


Chart 1.—Age incidence of rickets by roentgen-ray examination. The early incidence by roentgen-ray examination, shown in this chart, should be compared with the late incidence by clinical examination, shown in Chart 2.

showed the disease to be advancing. Treatments have been given at an 18 inch distance on the front and back of the trunk and on the lower extremities, beginning with an exposure of two minutes and increasing gradually to twelve or fifteen minutes. Treatments have been given three times a week, when possible. The average mother, however, has not been willing to bring the baby more often than twice a week.

A preliminary report may be given at this time of the group of babies born in the first year of the demonstration, from Aug. 15, 1923, to Aug. 15, 1924. It has been possible to follow a series of 216 babies with more or less regularity. These babies range in age at the present time from 8 to 18 months. The accompanying table shows the amount of antirachitic treatment taken by these infants grouped according to the degree of cooperation of the parents. Group 1 includes those babies who received regular treatment throughout the period of observation. The average amount of cod liver oil taken per month by the babies in the different groups is shown in this table. The 116 babies in Group 1 took an average amount of 3⅗ ounces (107 c.c.) a month—1 teaspoonful a day—over an average period of twelve months. In contrast to this group stands Group 2 (*c*), in which the babies took an average of only 1 ounce (30 c.c.) a month for six months. The maximum amount that any baby took each month was 10⅗ ounces (314 c.c.). Many babies in Group 1 took an average of 8 ounces (236 c.c.) a month—2 teaspoonfuls a day—for twelve months. The amounts of direct exposure to the sun are indicated on the table as good, fair and poor; good meaning regular exposure summer and winter, fair meaning moderate exposure irregularly given, and poor meaning little or no direct exposure. Group 2 includes, (*a*) thirty children who

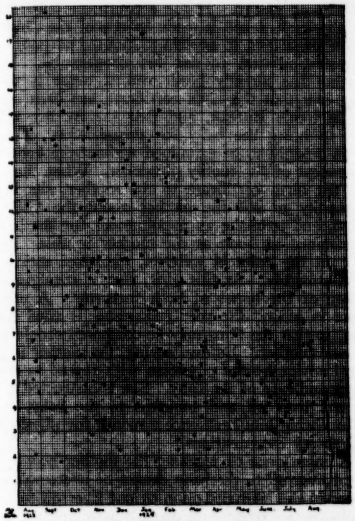


Chart 2.—Age incidence of rickets by clinical examination.

received treatment regularly but after 6 months of age, (*b*) twelve who received treatment only for the first six months and (*c*) fifty-eight who received little or no cod liver oil and who apparently had little direct sunlight. Group 2 (*c*) cannot be considered as a good control for the first two groups, because many of the babies received either a small amount of cod liver oil or some sunlight.

The extremely early incidence of rickets found by roentgen-ray examination in our series of infants is shown in Chart 1. Twenty-three, or 11 per cent. of the 216 infants, showed no rickets at any time by roentgen-ray examination. One hundred and seventy-nine, or 83 per cent., showed evidence of mild rickets by roentgen-ray examination before eight months of age. The remaining fourteen, or 6 per cent., showed rickets by roentgen-ray examination after eight months, but are not included in the chart since roentgenograms were not taken covering the early months during which the rickets may have first developed. Chart 1 shows the 179 infants who developed early rickets, arranged according to the month of birth and the age in months at which the roentgenograms showed the first positive evidence. It is noteworthy that in 90 per cent. of these

cases, rickets was recognized before 6 months of age, in 65 per cent. before 4 months, and in 12 per cent. before 2 months. Of these early diagnoses, 53 per cent. were made in the third and fourth months.

The diagnosis of rickets by roentgen ray at this early age has been made by the study of many series of roentgenograms taken at monthly intervals. By means of these series it is possible to trace back the disease from its well defined stage at 6 or 7 months to its earlier stages, and finally to recognize it in its incipient stage in the first, second or third months of life. The earliest changes may thus be clearly defined.

In a roentgenogram of the bone of a normal infant, the end of the shaft, if seen in exact cross section, is clearly defined and convex, and the corners are rounded. If the bone is tipped, the surface of the end of the shaft is seen, and the roentgenogram is less distinct. It is sometimes difficult to differentiate between a change due to position and the change due to rickets. The earliest changes of rickets demonstrable by roentgen ray in the bones of the forearm appear at the distal end of the shaft of the ulna. The first change is not always the same in different infants. The beginning of the rachitic process is frequently indicated by the appearance of slight prolongations from the cortex of the bone, or hairlike projections creeping around the cartilage at its periphery. These projections are probably the first evidence of the well known fraying. Whenever these prolongations have been seen in plates taken in the first or second months, later plates have shown other evidences of rickets. In early rickets, moreover, there is frequently very slight cupping of the distal end of the bone, and the end of the shaft is widened with sharp instead of rounded corners. The line of demarcation between the cartilage and shaft may not be clearly defined and may show slight irregularities. When fraying can be seen at the end of the bone, or there is more than the slightest cupping or flaring, the rachitic process has progressed beyond its incipient stage. If cod liver oil is given to young infants showing these slightest changes by roentgen ray, lime salts will be deposited at the end of the bone, marking out and sometimes apparently intensifying the evidence of rickets. Frequently, after cod liver oil has been given, a fine line can be seen just above the end of the shaft outlining the zone of primary calcification and indicating that a slight rachitic process had been present, but is now under control. The use of cod liver oil or ultraviolet rays will often help in making the diagnosis of early rickets.

Verification of these changes shown by the roentgen ray in early rickets is being made by the pathologic study of ulnae and radii obtained from young infants at necropsy. In each case a roentgenogram is taken of the bones, and the roentgen-ray diagnosis verified by microscopic examination of stained sections. Only a few such examinations have been made up to the present time, but in each case in which incipient rickets has been diagnosed by the roentgen ray, microscopic examination has shown it to be present.

Chart 2 shows the age at the appearance of rickets by clinical examination. Of the 216 infants studied, 186, or 86 per cent., showed physical signs of rickets. Thirty infants showed no clinical signs of rickets. A comparison of Charts 1 and 2 shows that the clinical evidence of rickets appeared much later in our series of infants than did the roentgen-ray evidence. Of the clinical diagnoses 80 per cent. were made after 4 months of age, the average age being 8 months.

An early clinical diagnosis of rickets is very much more difficult to make with any degree of certainty than an early roentgen-ray diagnosis, because the deformities of rickets are exaggerations of the normal shape of bones and cartilage. Even though we know that 83 per cent. of infants at 8 months will show some roentgen-ray evidence of the disease, it is difficult in many cases to be sure that certain indefinite clinical signs are manifestations of rickets. The line of differentiation between the palpable costochondral junctions of the normal baby and the slightly enlarged costochondral junctions of early rickets is impossible to draw. One is easily deceived regarding enlargement of the epiphyses at the wrist either by too much or by too little fat. It is difficult to tell the exact time at which the prominence of the parietal bones, present in many negro babies at birth, must be called rachitic bosses, or when an inherited prominent forehead, or a very large head, such as is seen in premature babies, must be called rachitic.

In our investigation, a clinical diagnosis of rickets has been made when any two of the following well recognized early signs of rickets have been definite: enlarged costochondral junctions, enlarged epiphyses at the wrist, enlarged cranial bosses, craniotabes or a Harrison's groove. In a large proportion of our cases, when one sign was definitely present, others were also. A diagnosis has not been made on one sign alone except in the case of craniotabes; when craniotabes has been sufficiently marked, the clinical diagnosis has been made on that alone. Unless the softening extended into the bodies of the cranial bones, it has not been considered sufficient evidence for a diagnosis. In most of our cases of moderate or marked craniotabes, other signs have been present. In all the cases in which craniotabes was present, the diagnosis of rickets was corroborated by roentgen ray.

Amount of Antirachitic Treatment Taken by Two Hundred and Sixteen Infants Grouped According to Degree of Cooperation of Parents

	Infants Studied		Cod Liver Oil					Sun: Direct Exposure		
	Number	Per Cent.	Average Amount Taken, Ounces	Average Number of Months	Average Amount Taken per Month, Ounces	Largest Average Amount Taken per Month, Ounces	Smallest Average Amount Taken per Month, Ounces	Good	Fair	Poor
1. Regular treatment throughout period	116	53	43.2	12	3.6	8.5	1.3	78	30	8
2. Regular treatment:										
(a) After 6 months	30	14	34.7	8.5	4.09	10.6	1.5	12	13	5
(b) Before 6 months	12	6	20.0	8.5	2.36	4.0	0.29	1	9	2
(c) Little or no treatment	58	27	6.3	6	1.05	4.83	0	—	7	51
Totals	216	100				4 to 10.6	0 to 1.5	91	59	66

The importance of the fact that definite clinical signs of rickets do not appear until after the roentgen-ray evidence cannot be overemphasized when considering the problem of prevention. It is well known that the curative effect of cod liver oil and light are not marked until from the third to the sixth week of treatment. It may be supposed, therefore, that the preventive effect of these measures will not be well established for at least a month. If 65 per cent. of infants with rickets show the roentgen-ray evidences before the end of the fourth month, prophylactic treatment should certainly be begun by the end of the first month, if not sooner. Our figures indicate that even larger doses of cod liver oil than we have given and longer exposure to direct sunlight should be recommended, if the disease is to be entirely prevented. Perhaps, as will be pointed out later, rickets cannot be entirely prevented in rapidly growing infants.

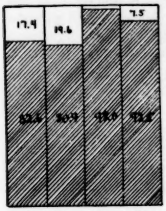


Chart 3.—Seasonal incidence of rickets by month of birth, as shown by the roentgen ray. Early rickets shown by roentgen-ray examination may occur at any season regardless of the month of birth.

The seasonal incidence of the first evidence of rickets by roentgen-ray examination is shown in Chart 3. The time of the year in which the infant is born has made essentially no difference in the appearance of these early changes. These changes were shown by a somewhat larger percentage of babies born in the spring months than of those born in other seasons. The percentage of the infants born in the summer who showed the first evidences of rickets before the end of two months was smaller than the percentage of those born in the winter. The well known seasonal variation in rickets depends on the season of examination and not on the season of birth. Slight rickets is found in young infants at all seasons of the year, moderate or marked rickets in the winter months.

Chart 4 shows the total incidence of rickets by both roentgen-ray and clinical examination in the series of 216 infants of the demonstration group and in three groups of control infants. The first control group consists of 127 infants who were born outside the demonstration district during the same months as our series, from August, 1923, to August, 1924, concerning whom no instructions regarding sunbaths had been given, and who had taken no cod liver oil. The second and third control groups are children born in the two years previous to the beginning of the demonstration, who had had no antirachitic treatment. The total incidence of rickets in the demonstration group (96 per cent.) is undoubtedly higher than in the control groups, because, as a result of repeated examinations, evidence of transient rickets by the roentgen ray, and slight rickets by clinical signs, has been found more frequently than in the control groups in which only one examination has been made. In the control groups a doubtful roentgenogram was classified as negative, whereas in the demonstration group a doubtful roentgenogram was usually followed in a month or two by a positive one. Moreover, in the first control group only 5 per cent. of the infants are negroes, whereas in the demonstration group 26 per cent. are negroes. The second and third control groups have 24 per cent. and 19 per cent. of negroes, respectively.

Charts 5 and 6 show the incidence and severity of rickets by roentgen-ray and clinical examination in the group of 116 infants shown in Table 1, who received regular antirachitic treatment, and in the three groups of control cases. The average age when the diagnosis of rickets was made by roentgen ray in the treated group was 4 months; by clinical examination, 8 months. In the three control groups the average ages were 10, 13 and 25 months at the time of diagnosis. None of the infants of the demonstration developed marked rickets, and only 4.3 per cent. developed moderate rickets shown by roentgen ray, whereas 23 per cent. of the first and 34 per cent. of the second control group showed both moderate and marked rickets. The antirachitic treatment given to the infants in the series of the demonstration has been successful in keeping them from developing advanced rickets.

Chart 7 shows the percentage of infants with active rickets found by roentgen-ray examination and the percentage with rickets which is under control or completely controlled in the group of 116 infants who received regular antirachitic treatment and the percentage in the three control groups. "Active" means that the disease is progressing without evidence of lime salt deposit; "under control" that the disease is still present, but lime salts are being deposited, and "completely controlled" that there is evidence of the previous existence of rickets which is no longer active. At the present time 37 per cent. of the treated infants show complete control. The first two control groups show activity in 18.5 per cent. and 21 per cent., and complete control in only 7 per cent. and 8 per cent. The third control group at the average age of 25 months shows 38 per cent. completely controlled, the same amount as the treated group at the average age of 13 months. It will be remembered that 34 per cent. of this third control group showed marked or moderate clinical deformities. Whether the treated group at 25 months will show the same degree of rachitic deformities as this control group now does, remains to be seen. The antirachitic treatment given to the group of 103 infants has successfully held the disease in control. Even the five infants in whom the rickets progressed from a mild to a moderate degree showed deposition of lime salts. No treated infant has shown more than slight clinical evidence.

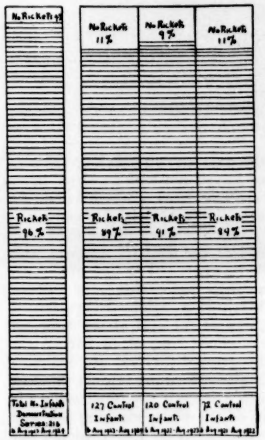


Chart 4.—Total incidence of rickets shown by roentgen-ray and clinical examinations in the 216 infants followed in the demonstration and in three control groups.

The extraordinary chronicity of rickets has been striking in our series of roentgenograms. The evidences of rickets first seen in the second or third months of life may be followed month after month even to the

end of the first year or later. If the infant is under treatment, evidence of lime salt deposit as well as the evidence of active rickets may be seen; the process finally becomes low grade and sluggish and, though constantly present, is controlled. If the infant is not under treatment, the roentgen ray shows increasing and accumulating evidence of disease month after month, until the well known picture of marked rickets is seen. Lime salts apparently can be deposited in one part of the cartilage of a growing bone when they are not deposited in other parts. Rickets and repair of the rachitic process go on hand in hand for months and in some cases for years.

That rickets is intimately associated with growth is well known, and that it should appear at the time when most active growth is taking place, namely, the first four months of life, is not extraordinary. The rate of growth of the infant influences the early development of the disease. Large, rapidly growing breast fed

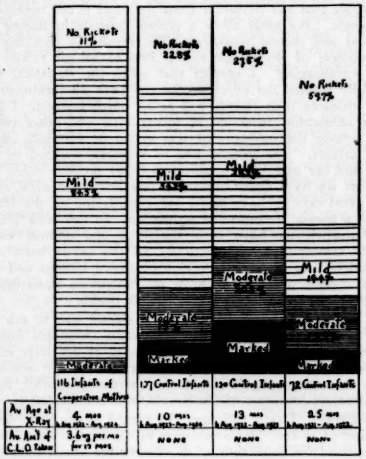


Chart 5.—The severity of rickets found by roentgen-ray examination in the 116 infants who took regular antirachitic treatment and in three groups of infants who took no cod liver oil. The absence of marked rickets in the group under treatment may be noted. Since the roentgen-ray diagnosis is based on the evidence of rickets at the growing ends of the radius and ulna alone, and not on long bone deformities, the amount of "no rickets" increases with age.

infants and very fat infants uniformly show definite evidence of rickets. It is an uncommon thing to find a healthy vigorous breast fed infant who does not show rickets by roentgen-ray examination. Premature babies, who grow exceedingly rapidly, are notoriously rachitic. Malnourished infants frequently show small, slender bones with little or no rachitic change. If any two groups of infants show the need of early antirachitic treatment more than others, they are the large, rapidly growing breast fed infants and premature babies.

Our investigations have shown that a slight degree of early rickets is well nigh universal in our climate and in our state of society. The very intimate association of rickets with growth, its early appearance regardless of season, and its universality raise the question, which, however, I am not yet prepared to answer, whether this slight degree of rickets must not be considered normal. Before this question could be answered, it would be necessary to study the amount of rickets existing in a group of young infants born and living in the tropics.

89 Dixwell Avenue.

ABSTRACT OF DISCUSSION

DR. EDWARDS A. PARK, New Haven, Conn.: The point that Dr. Eliot raised is of the greatest importance; namely, that almost all infants who are thriving show slight degrees

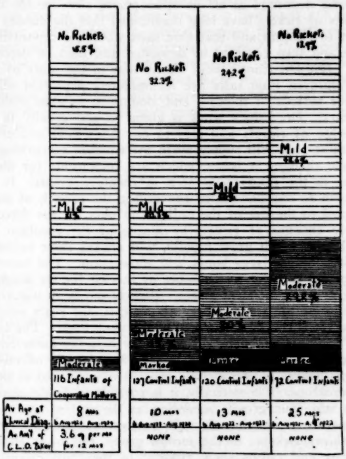


Chart 6.—The severity of rickets found by clinical examination in the 116 infants who took regular antirachitic treatment and in three groups of infants who took no cod liver oil.

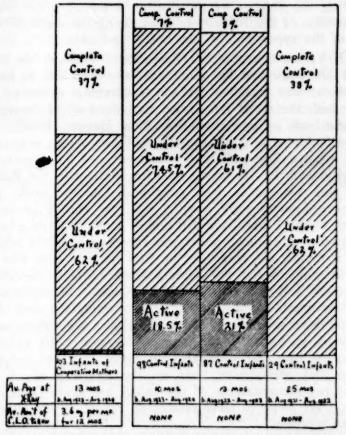


Chart 7.—The degree of activity and control of rickets in a group of 103 infants receiving antirachitic treatment, and in three groups of infants who received no cod liver oil.

of rickets. The possibility which she has suggested that this mild degree of rickets is physiologic and means merely that the impetus of growth is greater than the power to calcify is of great interest. Before one can think that this slight degree

of rickets, which is detectable by means of the roentgen ray, is physiologic, proof of its existence must be at hand in infants living in distant parts of the earth under different conditions of food and climate and of different racial origins. Another point of great interest, which has developed in the course of Dr. Eliot's work but has not been brought out in her paper, is that rickets goes on in many children for months or perhaps for years, neither progressing to extreme states of development nor disappearing. In infants suffering from rickets in this chronic form, it is necessary to think, lime salts are being deposited in some places in the cartilage and are not being deposited at all in other places close beside them. Students of rickets have long maintained that the disease was subject to relapses and that lime salts would be deposited for a time and then cease to be deposited and then be deposited again. But Dr. Eliot's work shows that in the cases of very many children lime salts are incompletely deposited all the time for periods of months, and, doubtless, in some children, for years. Dr. Eliot's work is going to add greatly to our knowledge of rickets and also to our knowledge concerning other things. It will supply much information concerning the anatomic changes in bones, which are responsible for abnormalities in the shadows as seen in roentgenograms. It will add much to our knowledge concerning the growth of bones. In regard to the use of the radius and ulna for the detection of early changes of rickets by means of the roentgen ray, small bones, which grow rapidly, will always show evidences of rickets before large bones will show them. The bones of the arm are superior to the bones of the leg for the diagnosis of rickets in its incipient stages. Rickets can be demonstrated by means of the roentgen ray at the cartilage shaft junction long before it can be recognized in the shaft itself. The lower end of the ulna will show rickets earlier than the lower end of the radius, though both bones will be found to be affected to the same degree by the rachitic process when looked at under the microscope. Theoretically, it is possible to divide cases of rickets into four groups according as the end of the radius and ulna are or are not affected. In the first group, the ulna alone shows rickets; in the second group, the lower ends of both ulna and radius show rickets; in the third group, the lower ends of ulna and radius and the upper end of the radius show rickets; in the fourth group, both ends of the radius and ulna show rickets. Practically, however, such a method for estimating the severity of the disease is not of great importance because of the difficulty in determining the slight involvements of the upper ends of the radius and ulna.

DR. J. VICTOR GREENBAUM, Cincinnati: Through the kindness of Dr. Park and Dr. Eliot we have been able to get at the nub of our problem without concerning ourselves too greatly with the racial types, age, etc., since all of these factors have been so ably studied in New Haven. Briefly, our problem has been to study the effect of diet during pregnancy on the infant. The pediatric department and the department of nutrition of the University of Cincinnati, with the Babies' Milk Fund Association, have collaborated in the work. We have worked about eight months thus far with a group of pregnant mothers who have had one or more children affected with rickets. Dietitians, under the supervision of the professor of nutrition, are sent three or four times a week into the homes in order to give the mothers directions as to the proper foods to eat and how they should be cooked. In addition we supply oranges, cereals, milk, green vegetables and eggs gratis to these mothers in order to balance their diets when their food is found inadequate with respect to calcium, phosphorus, iron, carbohydrates, proteins, fats and calories. Calcium and phosphorus tests on the mother's blood and roentgen-ray examinations of the babies are made from time to time. We hope to have results to report at the time of the next meeting.

DR. MAY G. WILSON, New York: A similar study is being conducted at the New York Nursery and Child's Hospital. Our results are in close agreement with those reported by Dr. Eliot. We have been able to examine the concentration of the calcium and inorganic phosphorus in the serum of a group of about twenty infants developing rickets. These determinations showed values within the normal range, although the roentgen-ray evidence of early rickets was present. I should like to ask Dr. Eliot the criteria she used to establish a clinical diagnosis of rickets under 5 months of age.

DR. C. G. GRULEE, Chicago: There is one point which has not been sufficiently emphasized, and that is, that it requires a certain degree of good nutrition to produce rickets. It does not occur in scrawny infants. That was noted by Jundell two years ago. Marantic babies do not usually show severe rickets.

DR. C.-E. A. WINSLOW, New Haven, Conn.: It is, of course, too soon to speak of the results of this study with finality. There are two points, however, that should be emphasized: First, there is a condition of physiologic rickets that is essentially a normal growth process; second, this process can be checked and prevented from becoming pathologic by proper treatment. The first point is important. We have found in the medical examination of the school child that deviations from an ideal condition of health are exceedingly common. Also in connection with the draft examinations we heard a good deal about the physical defects and the 12-year mentality of the draftees. In interpreting such data we must keep in mind the difference between the normal and the ideal, and remember that any deviation from the ideal is not necessarily pathologic. We must allow a certain latitude in testing for physical and mental weakness. The results in checking the development of physiologic rickets into pathologic rickets are most encouraging. I suspect that when the statistical data are fully studied the effect of the cod liver oil treatment on other diseases than rickets will be of much interest. I look for a substantial reduction in tuberculosis and other conditions among the members of this group of carefully supervised infants. The general line of research pursued by Dr. Eliot and her associates promises to be of peculiar value. In the past we have either studied a few selected clinical cases with great care or have based our conclusions on the statistics of a normal uncontrolled population. In this New Haven demonstration we have both statistical and clinical methods, in combination, on practically all the babies born in a selected district of the city. This combined clinical and statistical method promises to throw much light on many important problems of medicine and of public health.

DR. JULES M. BRADY, St. Louis: I should like to ask Dr. Eliot whether she has ever had unpleasant symptoms following the administration of such large doses of cod liver oil to new-born infants. It has been our experience that it was necessary in such young infants to be extremely careful, as at times, serious looseness of the bowels was encountered.

DR. EFFA V. DAVIS, Chicago: In regard to the early determination of rickets, Dr. Greenbaum raised a point that I have had in mind for some time as to whether the breast milk may not at times be carrying the burden of rickets. Last summer in London, at the physiologic laboratory department of King's College for Women, I met Gladys A. Hartwell, who was experimenting on the diet of rats with reference to the condition of their nursing young. Her work shows the evil effects of an excess of protein in the diet of the mother rats on their nursing babies, together with other interesting facts well worth studying. The diet of the nursing mother has a much greater effect on the nourishment of her child than has been realized. I hope the work undertaken in Cincinnati will go far in elucidating this problem. The work on rats was most interesting and was carried on along many lines by Miss Hartwell.

DR. H. J. GERSTENBERGER, Cleveland: I should like to know what kind of cod liver oil was given, and also whether Dr. Eliot noted any effect of the type of diet on the quantity of cod liver oil needed in the prevention of rickets. From a very extensive experience during the last eleven years in feeding cod liver oil in the form of a food having a protein, carbohydrate, fat and mineral content corresponding to that in human milk, I know that about 3.5 c.c. of Newfoundland cod liver oil will cure rickets, as checked by the roentgen ray and by the determination of the calcium and phosphorus content of the blood serum. Therefore, I believe one is justified in assuming that a food that can cure rickets will prevent this disease; in other words, about 3.5 c.c. of cod liver oil used per quart of food of the composition indicated has been sufficient to prevent rickets.

It is my impression that a higher carbohydrate and protein content in the mixture might raise the amount of cod liver oil needed to prevent rickets.

DR. JOHN A. FOOTE, Washington, D. C.: Dr. Eliot has shown the true scientific critical spirit in her investigations by asking whether or not this condition could be regarded as physiologic, and suggests that a study of tropical children might be useful as a control. But in a study of children under tropical conditions it would be very hard to standardize according to the New Haven demonstration. Recently I attended a private view by the National Geographic Society of motion pictures taken on the Solomon Islands. The explorer had reproduced the dances of the natives, a sort of daily dozen, and the many views of nursing children showed the native babies to be unusually robust and well nourished, with splendid physical development, and no suggestion of rickets. In the numerous pictures shown of groups of older children from 6 to 10 years of age, I have never seen such perfect physical perfection as regards posture and bone and muscle development. I asked the explorer what the diet of the people was, and he said it consisted of fish and yams. I would suggest that, if ideal control experiments should be considered, we include the natives of the Solomon Islands in our investigations, since clothing seems to have no part in their philosophy of life, and they subsist on a very restricted diet. I have been in touch with Dr. Eliot's work and can appreciate her difficulties in attempting work with dispensary patients. In the early days of our studies on the effect of treatment with cod liver oil on the calcium and inorganic phosphorus of the serum of rachitic children, we attempted to study dispensary patients in order to avoid the expense of maintaining these patients in the hospital for weeks at a time. Our results were so irregular that we soon gave up the attempt and confined our studies to hospital patients. Only then were we able to establish a definite relationship between the activity of the rickets and the blood findings. Cod liver oil or any other antirachitic agent must be given in sufficient quantity regularly until a diet that itself contains an adequate amount of antirachitic factor can be taken. Dr. Eliot's work presents an opportunity to study a question that is of considerable interest from the standpoint of the pathogenesis of calcification; namely, Does the increase of the inorganic phosphorus concentration of the serum that follows antirachitic treatment precede and determine calcification, or does it follow the deposition of fresh calcium phosphate in the rachitic cartilage and metaphysis?

DR. JULIUS HESS, Chicago: In a study of the diagnosis of the fetal age by roentgenograms, I was able to demonstrate osseous centers in specimens clarified by sodium hydroxid and glycerin at an average of seven to ten days sooner than they could be seen in roentgenograms. Has Dr. Eliot estimated how soon calcium deposits can be seen in the plates after treatment is started? Calcium deposits of certain density are necessary before they are seen in the roentgenograms. If these are visible in three weeks after treatment is started, the bone changes must start very early; in other words, healing is earlier than roengen-ray evidence. In our premature work we had to start to feed cod liver oil in the third or fourth week after birth to prevent rickets. I would like to know at what age Dr. Eliot thinks cod liver oil should be started for prophylactic purposes in the breast fed infant.

DR. MARTHA M. ELIOT, New Haven, Conn.: We also are studying the diets of pregnant mothers in New Haven, but our work is not yet ready to be reported. We have done no blood chemistry in connection with our study. It is not possible in a preventive study of this sort to take repeated specimens of blood for examination and still keep the cooperation of the mothers. I think the clinical diagnosis of rickets under 5 months of age is a most difficult problem. Whether palpable costochondral junctions are sufficient evidence on which to make a diagnosis of rickets is debatable. When the costochondral junctions or epiphyses are enlarged, or cranial bosses present, and when there is moderate or marked craniotabes, we have made a clinical diagnosis of rickets. We have not made a diagnosis on one finding alone, except in the case of marked craniotabes. We have not seen any serious digestive upsets from the use of cod liver oil. There has been no diarrhea and only one or two cases of true vomiting. If the oil is not given with care the baby may spit out that which is not yet swallowed. We have had more frequent complaints of constipation than of any other disturbance following the administration of cod liver oil. On the whole the babies took the oil well. The cod liver oil used has all come from the same source. It is an American product. Two white babies who developed second degree rickets were given oil bought at drug stores and not the oil supplied at the office. Dr. Hess asked how early we note rickets by roentgen ray. We have seen it in infants under 1 month several times. We have made no studies to determine how soon lime salts are deposited after cod liver oil is started because the roentgen rays are used only at monthly intervals. From 75 to 80 per cent. of our series of infants were breast-fed. Some had mixed feeding. We have not found that there was any variation in the amount of cod liver oil required for children on different types of diets. We shall have more data on that point by the end of the study.

PULMONARY TUBERCULOSIS

ITS SURGICAL TREATMENT *

EDWARD ARCHIBALD, M.D.
MONTREAL

I think it is fair to say that the general practitioner, even the general internist, and perhaps still more the general surgeon is still unfamiliar with the fact that certain patients with pulmonary tuberculosis, whose future is otherwise hopeless, can be, by operation, not merely improved as to their distressing symptoms, but, to all intents and purposes, practically cured. It is true that, to the expert in tuberculosis, the use of the word cure is anathema. At most he allows the term "permanently arrested." And as concerns the type of case here under consideration he is doubtless justified; for these patients are all at an advanced stage of the disease —at such a stage, indeed, that one cannot under any circumstances consider the word "cure" in its strict sense. Nevertheless, many of them are brought by operation to this level—that cough is abolished, sputum disappears, fever and pulse rate become normal, and the patient is able to do a reasonable amount of work, from half a day to a whole day. He becomes once more an ordinary member of society, and is under no necessity of taking treatment, provided he observes the ordinary rules of health, and takes reasonable care of himself. When this state has been reached and maintained for a year, the result is called by Sauerbruch, the great protagonist of surgical treatment in this disease, a "practical cure." This being understood, no harm is done by the use of the term.

There are certainly at this moment thousands of patients scattered throughout this continent, condemned to sanatorium life, practical exiles from home, who would be greatly benefited, and many of them restored to ordinary home life, if their medical advisers were aware of the value of operation; and whereas the operations heretofore reported in America number at present no more than between one and two hundred, I venture the prophecy that within ten years that number will run up to the thousands. One danger, however, is obvious; a danger that is particularly to be feared in the field of tuberculosis. Every new remedy for tuberculosis is heralded far and wide, especially in the public press; the patient, usually familiar with his disease,

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

usually quite aware of his outlook and always ready to catch at straws, comes to his physician for a trial of the new remedy, in this case of the new operation, and declares his willingness to take chances and assume risks. Consequently there is a constant tendency on the part of the patient, or of his physician, or, possibly still more so, of the surgeon to "give the patient his chance," to widen the indications, so that the unsuitable case is not infrequently accepted for operation, and the result may be disappointing to everybody. It is therefore extremely important, if this branch of the therapy of tuberculosis is not to suffer undeserved discredit, that a proper selection of cases for operation should be made.

TABLE 1.—*Summary of Cases Treated*

Total, 68 cases, divided as follows:	
1. Extrapleural thoracoplasty, posterior	
(a) Total (resection of ribs from top to bottom)	41
(b) Partial (resection of half the ribs, maintaining usually a pneumothorax over other half of lung)	9
(c) Posterior thoracoplasty, with addition of apicolysis in front, in three stages	6
2. Phrenicotomy (as the only operation)	3
3. Cutting Intrapleural adhesion to improve an existing pneumothorax	4
4. Pyopneumothorax	5

I cannot in this place go deeply into this aspect of the question, which might of itself form the subject of an entire paper; and I would refer those interested to the recent exhaustive paper by Dr. Alexander.[1] Briefly, the best case for operation is the "good chronic" in whom the disease is practically confined to one lung, with only slight and old trouble in the other lung (the other lung is practically never intact), in whom the evidence of resistance and of Nature's attempt to heal through fibrosis is seen in a general contraction of the diseased lung, pulling the rib spaces in, the diaphragm up, the heart, mediastinum and trachea across; in whom artificial pneumothorax has been tried and found impossible or insufficient because of pleural adhesions; and in whom no evidence of progressive spreading tuberculosis in other organs, or of any other serious disease, can be found. The patient has usually been ill for several years. Destruction and repair have in most cases gone hand in hand so that the lung shows both fibrosis and some cavitation. He is frequently afebrile and can be allowed a certain amount of exercise, provided he avoids fatigue. Nevertheless, his outlook as a good chronic patient is apt to change at any time on the occasion of a flare-up. He is living in constant danger of an extension of the disease, and his ultimate outlook is certainly not good.

Such, briefly, is the "good chronic"; but the indications need not be set quite so narrowly as this. There are also chronic cases that are not so good, whose progress downward, at any rate for several months, gives cause for immediate alarm. The patient is confined to bed or to very little exercise. He may or may not have fever and a fast pulse. His cough is usually troublesome. His sputum runs from very little up to very large amounts, but always contains bacilli. He is apt to have occasional flare-ups, and has come generally to a stage at which he himself, as well as his physician, views the future with alarm and with a quite definite sense of hopelessness, knowing that sooner or later there is only one end to it. The progress of the disease is definitely downward, and the patient is "slipping" slowly or rapidly. Provided, however, that the trouble remains chiefly unilateral and there is no active disease in the good side, operation is still to be considered, and is still attempted with a gratifying measure of success.

1. Alexander, J.: Surgery of Pulmonary Tuberculosis, Am. J. M. Sc. **168**: 1 (July), 268 (Aug.), 412 (Sept.), 574 (Oct.) 1924.

THE OPERATION OF EXTRAPLEURAL THORACOPLASTY

What, then, is the operation proposed, and what is its rationale? The operation consists in a resection of varying lengths of the ribs, posteriorly, from the first to the tenth or eleventh. It is done subperiosteally, and the parietal pleura should not be broken through. It is therefore called an extra pleural thoracoplasty. It should be done in two stages at least, occasionally in three, in order to avoid certain dangers and to keep the immediate mortality low. It is done posteriorly, because in this region the spring of the ribs is such that rib resection allows the anterior ends to fall farther in, and reduces the lung volume more than if it were done anteriorly. In favorable cases the reduction in the capacity of that side of the chest amounts to well over 50 per cent. As to the anesthesia, my own preference is for gas-oxygen combined with procaine, 0.5 and 1 per cent.

The rationale of the operation may be summed up in two words, rest and compression; and of the two it is probable that rest is the more important. Nevertheless, a large part of the good effect attained is certainly due to the mechanical factor of compression of the lung. Such compression, or such collapse (the terms are interchangeable), is the only thing that can bring about a reduction in the size of cavities and their ultimate disappearance, with cure through scar; otherwise the walls of cavities are held open by pleural adhesions and by the framework of the fibrous bands that run in all directions through the lung to the pleura. While this mechanical factor, that of the falling in of the ribs and consequent compression of lung, is what stands out clearest in the operation, on a superficial view, it is no less obvious that the removal of sections of all the ribs gives rest to the lung by reason of the simple fact that the operation cuts an important link in the chain of respiratory movement. Inspiratory expansion of the chest wall is bound up with an intact thoracic skeleton. When the ribs are cut, rib movements become impossible, and therefore inspiration and expiration on that side are impossible save for diaphragmatic movement. Any flow of air into or out of that lung becomes largely passive. It is "pendulum air" chiefly, and represents a small part of the air that goes into and out of the

TABLE 2.—*Deaths Ascribable to Operation of Posterior Thoracoplasty*

		Number of Cases	Number of Operations
Total	47	56	104
Partial	9		

Deaths: Cases	Deaths: Per Cent. of Cases	Deaths: Per Cent. of Oper.	Cause of Death
1st week 1	2	1	Acute lobar pneumonia of good lung on 8th day
2d week 1	2	1	Cardiac failure on 12th day
3d week 1	2	1	Streptococcal abscess under scapula, 21st day
7th week 1	2	1	Tuberculous pneumonia of good side
Total 4	8	4	

In six of these fifty-six, an apicolysis was done at intervals of six weeks to two and one-half years after the posterior thoracoplasty. Of these three patients died within two weeks. All three had very advanced cavitation with fibrosis throughout the lung and were in desperate condition. The operation of apicolysis in such cases should be avoided.

sound side. As a result, the lung is given rest, and rest is the cardinal principle of the treatment of tuberculosis anywhere.

Not only this, but the absorption of toxins from tuberculous tissue, through the lymphatics, it is asserted, is usually stopped by the mechanical compression of the diseased lung. It is difficult otherwise to explain the very rapid disappearance of fever and rapid pulse, which is frequently seen after operation.

TABLE 3.—*Late Deaths Not Ascribable to Operation of Posterior Thoracoplasty* *

In second month (from typhoid contracted in hospital after good recovery from two-stage thoracoplasty)	1
During first year (from progress of disease)	3
During second year (from progress of disease)	4
During third year (from progress of disease)	1
Total	9
During first two weeks from apicolysis, a third operation following the two-stage posterior thoracoplasty *	3
Total number of deaths	12
Total number of cases	56 = 21%

* Three cases following the operation of apicolysis are not included in deaths ascribable to the operation of posterior thoracoplasty, which the patients had previously borne without trouble; they are rather included in this table in "deaths from progress of the disease," as they were in a desperate condition and would have died before long without operation. The point is that the standard operation to be advised is a posterior thoracoplasty, which is sufficient in nearly all cases; while apicolysis in bad cases not benefited by the posterior operation is to be discouraged, because it carries too high a mortality. It would be unfair to burden the mortality figures of the standard operation with the high mortality of a third and somewhat experimental operation, carried out as a last resort, and which is no longer done in such hopeless cases. Such patients, without the operation of apicolysis, would have died of the progress of their disease, and the mortality figures for which these deaths are responsible should, therefore, come more properly under the category of "progress of disease."

Certain contraindications have to be kept in mind. Some of them have already been set forth in the brief recapitulation of indications. The chief one is, to my mind, the evidence of active, progressing disease in the good lung. It is in this respect chiefly that, as respects indications, thoracoplasty differs from artificial pneumothorax. The latter is a measure that allows of a retreat on the first threat of an unfavorable reaction, while from thoracoplasty there is no drawing back. Air can be withdrawn, but ribs cannot be replaced; consequently, a pneumothorax can be tried in cases of bilateral disease, even when that disease is active, but thoracoplasty should not be attempted. At the most, one may cut the phrenic nerve on the worse side.

A second contraindication lies in the presence of extensive tuberculosis in other organs. It has been said hitherto that the coincidence of intestinal tuberculosis forbids the operation, while that of laryngeal tuberculosis does not. This attitude is correct only so far as the coincidence of disease in these organs represents a lack of resistance on the part of the patient and a generalization of progressing disease; but if in a given case either intestinal or laryngeal tuberculosis is obviously chronic, if the patient's resistance seems sufficient to hold within bounds these extraneous manifestations, then there is no contraindication to thoracoplasty. I am able to report several good results in spite of evidence of intestinal or laryngeal involvement.

A more serious contraindication is the presence of chronic and serious nontuberculous disease, such as a nephritis or a hepatic cirrhosis, or a serious cardiac lesion. Such cases should not be accepted for operation.

RESULTS

We may now turn to a consideration of the results of thoracoplasty. In the time at my disposal it is not possible, nor is it perhaps necessary, to discuss the results that have been obtained in Europe and in this country, and I shall therefore confine myself to a report of my own cases. Until recently the literature in English concerning this subject has been comparatively scanty, but Alexander's recent comprehensive article, which reviews the entire literature makes this information now available for the English reader. I have arranged my results in tabular form, but I may add certain remarks of an explanatory and amplifying character.

In a general way one must qualify the somewhat bald figures which are suitable to a statistical report in the sense that any set of figures for one year will have to be changed in succeeding years, because patients suffering from pulmonary tuberculosis themselves change from year to year. One who is here set down as greatly improved may later rise to the level of a practical cure, or, on the contrary, may have to be set down as a late death. Again, in judging results as published by different surgeons, the personal equation has to be considered. One may judge as improved what another would call greatly improved; or a patient may be set down as a practical cure when in somebody else's opinion he is no more than greatly improved. Allowing for this, it is nevertheless true that the benefits of the operation far outweigh its risks. The proportion of practical cures and improvements runs well over 60 per cent., while its operative mortality is now surprisingly low. One has to reckon, it is true, with a late mortality attributable almost altogether to the progress of the disease in the other lung, or elsewhere, of around 30 per cent. But it is fair to say that nearly all the patients representing this 30 per cent. would have died in any event, and without operation would very possibly have died sooner than if no operation had been done, because, as a matter of fact, the usual result, even in unfavorable cases is an improvement lasting for several months. As proof of this, one might point to the fact that in only three of my series of fifty-six cases could it be said that the operation had apparently been the cause of an extension of the disease in the other lung.

TABLE 4.—*Results in Patients Surviving Operation Over Three Weeks (Operation, Thoracoplasty, Total or Partial, or with Apicolysis Added)*

Operations Over One Year, Up to Twelve Years Ago	Practical Cures	Greatly Improved	Improved	Deaths: 1st Three Weeks	Deaths: 2d Month On
42 cases	12 = 29%	12 = 29%	4 = 10%	2 = 4.76%	12 = 28%
Under One Year	**Greatly Improved**	**Improved**	**Stationary or Worse**		
14 cases	3 = 21%	7 = 50%	2 = 14%	1 = 7%	1 = 7%

I should like to call attention to the outstanding fact of the surprisingly low mortality resulting from the operation per se. It is to be understood here that I speak only of the standard posterior thoracoplasty in two or three stages, an operation which now is generally accepted as the standard procedure applicable to the vast majority of cases. In this sense I exclude three deaths in a series of six patients on whom I did an apicolysis as a third operation, subsequent to a two-stage posterior thoracoplasty. These three patients who died were extremely advanced cases, with lungs riddled with cavities, from disease lasting ten years or more, and the apicolysis was done as a last resort. I am now of the opinion that in such desperate cases the operation of apicolysis is indefensible, and that, when posterior

thoracoplasty has failed to bring about marked improvement, the chances of benefit from an added apicolysis are too small and the risk too great to justify it. At present I reserve this operation for good cases, in which there remains a residual apical cavity, while the rest of the lung is well compressed and the disease apparently halted, and in which there is nothing to fear from a chronic toxemia with probable myocarditis.

This being understood, it is to be pointed out that of fifty-six patients on whom posterior thoracoplasty was performed, not one died in the first day or two of operative shock; one died on the eighth day from an acute lobar pneumonia of the good side (and this was one of the two one-stage operations); one died on the twelfth day of cardiac failure, after the removal of the lower seven ribs, the operation being performed in a distant city without any opportunity of supervising the after-treatment; and a third died in the third week of a streptococcus abscess hidden under the scapula, the patient having been twenty years ill and in such a condition of advanced toxemia that I would not, with my present experience, accept him for operation. (The case belongs to 1913 and was the second of the

TABLE 5.—*Causes of Death*

I. During Hospital Stay:		
1	Streptococcus abscess under scapula after first stage; twenty-first day (in 1913)	
2	Following apicolysis, having previously stood posterior operation well; old cases; extreme fibrosis and cavitation; sixth, fourteenth and fifteenth days after operation; purulent bronchitis; cardiac failure; toxemia	
3		
4		
5	Acute tuberculous pneumonia of good side, seven weeks after operation	
6	Typhoid fever, after good recovery from thoracoplasty	
7	Cardiac failure on twelfth day after operation; poor condition from severe hemorrhages and prolonged toxemia; tenth to fifth ribs resected	
8	Lobar pneumonia of good side, on eighth day, after one-stage operation	
II. Later Deaths:		
9	Pyothorax, developing in partial pneumothorax one month after operation	
10	18 months after operation	All died from progress of disease, usually in other lung, or miliary; two with hemorrhages; all except two showed improvement at first
11	2 years after operation	
12	3 years after operation	
13	2 years after operation	
14	1 year after operation	
15	3 months after operation	
16	9 months after operation	

series.) It is surely a fact of prime importance that an operation of this sort, still generally considered as formidable, and carried out on material that can well be designated as frail, should on analysis be found to involve so low a mortality as 6 per cent. in the first three weeks. And if one considers that in these fifty-six cases there were performed 104 distinct operations under general anesthesia, the actual risk involved in any one operative act is further reduced by half. One does not hesitate to advise a patient with a cancer of the colon, for instance, to submit to operation though the immediate risk is greater and the prospect of permanent cure less than in the operation of thoracoplasty. My point, therefore, is that the profession is no longer justified in characterizing this particular surgical procedure as unwarrantably dangerous or "experimental" or as to be advised only as a last resort. Nothing is more definitely proved than the extraordinary benefit derived from the operation in patients who are still in good condition; while, on the other hand, experience has shown no less conclusively that the chronic case that is allowed to drag on for years, with progressing destruction of lung tissue, arrives ultimately at a stage in which cavitation is so great that operation can accomplish no more than a very modest improvement, and is attended with a greater immediate risk. It is my opinion, to put the whole question briefly, that when a patient is judged to be a suitable case for artificial pneumothorax and this is thereupon found impossible or insufficient, because of pleural adhesions, then, at that very moment, without further delay, a thoracoplasty should with rare exceptions be advised.

These statements need modification in one particular. Excellent results, to judge from the figures published in the literature, can be expected only from those, internists as well as surgeons, who have devoted serious study to the principles involved and to the details of the technic, for it cannot be said that the operation stands on its own feet as a mechanical procedure, standardized for all cases, such as the operation for hernia or for any other ordinary lesion. Team work is essential. The selection of the cases must belong in the first instance to the physician, but the surgeon also must acquire the ability to estimate the resistance of any given patient to the procedure proposed. I expect, and must always expect, from the physician, who has usually observed the patient over months or years, an estimate of the patient's resistance to his tuberculous lesions, and an estimate of the prognosis as to life if the patient is not to be operated on. But in addition to this the surgeon must be familiar with many things, not merely in the carrying out of the operation, but also in the preoperative and postoperative treatment. Length of ribs to be resected, and the number of ribs to be removed, vary according to indications from case to case according to the previous estimate of the patient's strength and according to the condition of the lungs as discovered with the removal of each rib. The condition of the heart and respiration before, during and after operation are of the greatest importance, as is also a knowledge of the physiology of paradoxical respiration and pendulum air and flapping mediastinum. The postoperative care has to be meticulous, precise and informed. One must have special knowledge as to posturing the patient; as to bandaging to support the partially unsupported thorax; of stimulants and sedatives; of how much to encourage coughing, how much to discourage it, and how much to prevent it.

Concerning the question of early mortality, there is no doubt that this particular operation, carried out as it is on patients frequently enfeebled by chronic toxemia, demands a great deal more of the surgeon, both in knowledge and in personal oversight, than do the more ordinary operations of surgery. In few other operations, at any rate, do the results reported by various surgeons differ so markedly; and I can only conclude that some operators lack either the necessary knowledge or the necessary conscience, or the necessary time and devotion, while others possess all these.

As to the late mortality, I have to record that one patient died in the seventh week from an acute tuberculous pneumonia of the good side, after having gone through the two-stage thoracoplasty without apparent trouble. This case, together with the one previously noted of acute lobar pneumonia, represent the only ones that force one to consider the danger of aspiration pneumonia. This means that in 104 operations an aspiration pneumonia, if it was such, occurred only in 2 per cent. In one of these the average sputum before operation was only 32 c.c. daily.

Another patient died in the seventh week from typhoid, contracted in the hospital, after a two-stage thoracoplasty which was perfectly well borne. Our

clinical judgment was that he was likely to turn out an exceptionally good result.

During the first year, three died; during the second year, four, and during the third year, one; all from the progress of their disease. All except two showed early improvement. In the whole list of those surviving the first two months, one can say that only two have been made worse by the operation. Of these, one was an instance of acute progressive disease, with early active trouble in the better side, in which only a first-stage operation was done, against one's better judgment but because of exceptional circumstances; and at present, six weeks after the operation, the disease is rapidly advancing in the better lung. The other case was one of six years' duration, with recent hemorrhages, necessitating a transfusion ten days before admission, with a loss of 35 pounds (16 kg.) in the past five months, and with night sweats and fever. She was operated on during August and September, 1924. There was some disease in the apex of the other lung, possibly active. After a marked initial improvement, the disease has lately been found to be spreading in the better lung. It is at least doubtful whether operation had any part in this aggravation.

In considering the good results, it is important to define what is meant by "practical cure," "great improvement," and "improvement." The definition of the first of these, according to Sauerbruch, has already been given in the earlier paragraphs of this paper. The term "great improvement" means a very marked diminution in cough and sputum, with, in nearly all cases, the disappearance of bacilli; the abolition of fever; a decided lessening of the pulse rate, and such an improvement in general well being as to enable the patient to take some exercise and enjoy the quiet pleasures of life, though still obliged to continue a modified course of treatment. This definition does not apply to the patients operated on less than a year ago. These obviously are still observing a rigid regimen in bed or in chair, which is imperative in all cases for the first six to twelve months.

The term "improvement" is loosely applied to those whose condition is decidedly better than it was, but is not so good as to bring them into the next higher class.

PHRENICOTOMY AND THE CUTTING OF PLEURAL ADHESIONS

Before concluding, I should like to discuss very briefly two subsidiary questions about which a good deal has been written. A cutting of the phrenic nerve in the neck, which is a simple and a safe operation, paralyzes the corresponding half of the diaphragm so that it rises and assumes a stationary position from 1 to 2 inches above its previous level. This is believed to afford a certain measure of rest, chiefly to the lower lobe, but also indirectly and in less degree to the upper lobe. It has been advised by Sauerbruch in doubtful cases, as a test of the resistance of the better lung to a slight extra functional strain, when one suspects that the better lung may not be able to stand a thoracoplasty. As to this point, my experience is yet too small (only four cases) to allow judgment. It has also been advised, by Alexander, Lilienthal and others, as a routine preliminary operation to thoracoplasty. I used it only once in this sense and could find no particular benefit from it. On the whole, my experience with thoracoplasty does not seem to indicate any particular necessity for complicating the procedure in this way, though I admit that in risky cases it might be a distinct advantage.

Concerning the operation of apicolysis, my position has been sufficiently indicated in earlier paragraphs. There remains to discuss the procedure of Jacobæus in the cauterizing, with the aid of a thoracoscope, and a galvanic cautery, of band adhesions running from lung to parietal pleura, restraining the good effect of an otherwise complete artificial pneumothorax. It has appeared to me from the first, in spite of the very favorable interest aroused in this country by this work of Jacobæus, that the method was too blind, too apt to be followed by hemorrhage and infection. I have preferred to make a small open incision, hook up the band, ligate doubly and cauterize between. This has been done successfully in three cases, while in two the nature of the adhesions encountered made the procedure either impossible or too dangerous. In such cases I prefer to give up the pneumothorax and substitute a thoracoplasty.

McGill University.

ABSTRACT OF DISCUSSION

DR. CHARLES D. PARFITT, Gravenhurst, Ont.: During the last seven years I have referred fifteen patients for thoracoplasty to Dr. Archibald. There was no operative mortality from the twenty-eight operations these patients sustained. The procedure was undertaken more than four years ago in four cases. In one of them, after temporary material improvement, death followed in nineteen months from complications. A more recent case ended fatally from typhoid three weeks after the second stage operation. The other patients have been materially improved in health, and, with probably one exception, are enthusiastic about the benefits obtained and consider the hardships incurred well compensated by the results. These were advanced cases, and all had had some sanatorium treatment. In nine cases, pneumothorax had been unsuccessfully attempted. Three had lost a previous pneumothorax, and three had a partial pneumothorax at the time of operation. Material improvement can be recorded in 86 per cent., with loss of tubercle bacilli in 72 per cent. Five were practical cures, eight showed material improvement, and two patients died. My personal experience certainly justifies faith in the value of this operation. Notwithstanding some disappointment from the patient's standpoint, because sputum may not entirely cease, greater safety and comfort have been obtained. This irrevocable operation with its risks demands a more stringent selection of cases than does artificial pneumothorax. Its possibilities should be appreciated. Intimate cooperation is essential between the internists and those surgeons who are willing to develop the necessary judgment and skill for making the operation and its results successful. In the United States, nearly 100,000 people die annually from pulmonary tuberculosis. At some period of their illness probably 3 per cent. of them are suitable for thoracoplasty. About 2,500 patients should, therefore, be operated on each year. These will enjoy longer and more comfortable lives and, because of lessened and less infective sputum, should be much safer members of the community.

DR. A. J. OCHSNER, Chicago: More than 1,000 persons die every week in the United States of pulmonary tuberculosis. Quite a proportion can be saved if the principles brought out by Dr. Archibald can be applied. My own experience has been so satisfactory in the performance of this operation that I am sure that in all parts of the United States if there were cooperation among internists, tuberculosis specialists and surgeons, there would be an enormous saving of lives. The selection of patients is brought out definitely in this paper. The result of careful physical examination and especially of roentgen-ray examination makes the selection not too difficult to be safe. These cases form a class in which other forms of treatment do not succeed in curing the patient. Lung compression by means of gas will cure a considerable number of

cases of one-sided tuberculosis, but there are cases in which adhesions prevent this form of compression and in those cases compression can be accomplished by this operation with relative safety. A few points should be remembered. One is never to do too much at any one operation. In Dr. Archibald's cases each patient has had two operations at least. If one finds that two operations are too dangerous, one should make three or four operations. It does not make any difference how often one has to operate, so long as one remains on the safe side. There is this danger—one begins to operate and one feels one might as well finish, and then the patient collapses. Another point that is important from the surgical standpoint: After all the ribs that are going to be resected—never more than six at a time—have been freed, and two or three have been taken out, the patient will begin to cough. If one asks the patient to stop coughing she will be unable, so why the request? But if one immediately urges her to cough some more, she will not be able to cough any more. There should always be a handful of gauze ready to protect the patient against rupture of the pleura.

DR. S. ADOLPHUS KNOPF, New York: Pulmonary tuberculosis is no longer purely a medical disease. It is a borderline disease. In the latter stages the surgeon now has almost as much to do with it as the physician. We all know the splendid work Dr. Archibald has done. His results are marvelous. Unfortunately, not all are so skilful or so successful as he. My reason for asking the privilege of discussing this paper is simply to give a few little hints from the medical side that may be helpful. I do not know of any medicine that will help to liquefy tenacious expectoration better than ordinary salt. The patient is given as much as he can conveniently take with his food for two or three days before the operation. The cough will become easier because, besides increasing osmosis, the sodium chlorid impels him to take larger quantities of water. The patient should also have been trained in slow diaphragmatic respiration and to control his cough so as only to cough when he feels he should expectorate. I would also recommend thorough dental hygiene, and cleansing the upper respiratory tract. We must do everything possible to prevent aspiration pneumonia, of which I have read and seen a number of cases, not a few having caused death. There is also a mechanical way to overcome the danger of aspiration pneumonia, which consists in strapping. A number of thoracic surgeons have told me that aspiration pneumonia occurs usually in the unoperated side. I would suggest, therefore, that one strap that side with adhesive plaster or use that splendid new apparatus invented by Dr. Foster of Colorado Springs. It is a sort of plaster-of-Paris jacket containing rubber bulbs which can be blown up to compress the respective portion of the lung. To add to the effect of the local anesthetic, one should not fail to use the psychic treatment. Tell the patient not to be apprehensive and that although he is submitting to a serious operation, if he is brave, patient and quiet, he will greatly help you. A soft-voiced nurse or intern standing at the head of the operating table can do more psychotherapy, by diverting the patient's mind from the operation or praising his bravery. Jacobæus' operation, which consists in cutting the adhesions, is, to my mind, not nearly as safe as the operation described by Dr. Archibald. I believe thoracoplasty is one of the greatest achievments of surgery and an inestimable help to modern phthisiotherapy.

Endocrine Therapy.—Endocrine therapy may have as its object the replacement of a deficient internal secretion. With thyroid and pituitary extract and insulin we are here on sure ground; with parathyroid and pituitary extract on less certain ground; with the remainder on very doubtful ground. But it may also have as its object the employment of some extract simply for its pharmacologic action, such as epinephrin for its local vasoconstrictor effect or for other effects involving its stimulating action on the sympathetic, as in asthma. Pituitary extract may similarly be used for its stimulating effect on plain muscle, as in paralytic distention of the bowel.—**Brown, Langdon**: *Proc. Roy. Soc. Med.* **18**:25 (June) 1925.

UNIVERSALIZING BREAST FEEDING IN A COMMUNITY *

FRANK HOWARD RICHARDSON, M.D.
BROOKLYN

Universalizing breast feeding in a community has become standardized. There need no longer be any doubt or hesitation as to how to proceed in bringing about this state of affairs, which means so much in the reduction of infant mortality rates. Ever since Sedgwick showed what could be done, in his classic experiment in Minneapolis, a definite procedure has been recognized. It may be possible to improve on this, here and there; but it is hard to conceive of any basic change in procedure that can be successfully employed to bring about a state of natural feeding in a community.

This procedure consists of three essentials. 1. There must be a group of physicians who are convinced of the overwhelming superiority of breast feeding over bottle feeding; who believe it attainable for the vast majority of infants, and who are familiar with a working technic for making breast feeding possible for the individual child. It is unnecessary to remind any one familiar with infant feeding today that the main points of this technic are the manual expression of the mother's breast after nursing, and the giving of complementary feedings whenever the amount of breast milk secreted is insufficient, the amount taken to be decided by the baby himself.

2. There must be the cooperation of the birth-recording department or bureau of the community, whether of the city or of the state department of health.

3. There must be an organization controlling sufficient nurses trained in the technic of breast feeding, to visit each newly made mother, as soon as a birth certificate is filed, in order to instruct her in the desirability of keeping her baby on the breast, as well as in the way to accomplish this.

It was inevitable that these three fundamentals should have formed the basis of the Nassau County (N. Y.) breast feeding demonstration in 1923 and 1924—the first large-scale piece of work along this line to follow the trail that Sedgwick blazed. The New York State Department of Health, which was interested in putting this on as a demonstration of what might be done anywhere in the state, supplied in its own machinery the second and third essentials; viz., the birth-recording bureau, in its bureau of vital statistics, receiving reports from the local registrars of births; and the nursing organization, in its division of maternal infancy, and child hygiene. The Brooklyn Pediatric Society, with which there was the closest cooperation throughout, furnished the first essential; viz., the group of physicians vitally interested in the spread of breast feeding.

There was, however, one very important modification of the Sedgwick procedure, to which must be attributed the lack of any opposition on the part of the local medical profession. In the Nassau demonstration, there was a rigid rule that, on notification of a birth, the nurse to whom the case was assigned must go first to the physician who had signed the birth certificate. She must find out whether or not he wished his patient visited by the nurse; and, if so, whether there were any special instructions which he, as the attending physician,

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wished carried out by her, as his nurse. If he did not wish the call made, the case was at once dropped from the records. This accomplished two things. First, it eliminated the perfectly understandable resentment that is always present, when a private physician suddenly finds a third person injected into the situation, as an interloper between him and his private patient, without his previous knowledge and consent. Second, it brought about a desirable situation in which the nurse was acting for the physician, who introduced her pleasantly to the patient, because he had become interested at first hand in the demonstration.

Another noteworthy advance consisted in having all the figures evaluated by an impartial, professionally trained statistician, rather than by the interested physicians themselves, as is usually the case with medical records. This fact should be remembered, in comparing the figures resulting from this demonstration with any others.

There were, on the other hand, some unexpected difficulties here that might not be met in subsequent efforts. The greatest of these was the delay in getting the notifications of births. This apparently small matter proved an enormous unforeseen handicap, as first contacts were sometimes delayed until the fourth or even the fifth week after birth—in some cases, even longer. When one remembers that careful records show that one half of the premature weanings take place during the first two weeks of life, and that three quarters occur during the first month, it can readily be seen that the Nassau demonstration suffered a serious handicap from this cause. When, as has been happening all over the state as a result of this demonstration, the physicians themselves through their county medical societies take the initiative in putting on these campaigns, this difficulty is automatically obviated; for the local physicians, when they are sufficiently interested to inaugurate such an effort, will themselves notify the nurses of their deliveries, and so obtain for their patients the advantages of early contact with these specially trained breast feeding nurses.

In these instances, there is the added advantage, which was generally not present during the Nassau demonstration, that the individual physician takes a personal interest in each case, and gives it the serious attention that he has previously given to his bottle-fed babies only. In such communities, the idea is spreading among the medical men that the maintenance of breast feeding requires every bit as much scientific knowledge as does the making up of formulas for artificial feeding. Only when this idea becomes general will breast feeding come into its own.

Another handicap that was voluntarily assumed, in the full knowledge that it would militate against the attainment of the highest figures, was the constantly changing personnel of the nursing force. During the demonstration, all the nurses on the staff of the division were assigned sooner or later to the work in Nassau County, where they were given an opportunity of learning the technic and of seeing at first hand what breast feeding was capable of. It was believed that the loss in efficiency for the demonstration would be more than compensated for by the fact that this knowledge would henceforth be disseminated all over the state, by having the whole nursing staff familiar with the technic of breast feeding, and its universal applicability.

With these conditions, what were the results obtained? Leaving aside the mass of intensely interesting data, which will require further study before publication, the main question that interests us here is, "How many mothers were able to nurse their babies, and for how long?" These are the figures in answer, prepared, be it remembered, by a trained statistician. The demonstration dealt with 2,815 babies. The percentage of breast feeding for each month of life is shown in the accompanying table.

Summarizing, for practical purposes, we may say that we found that nine tenths of the mothers succeeded in nursing their babies for one month, and that two thirds of them did so for seven months.

A fair question might be: What was the effect of the demonstration on the infant mortality rate of the county in which it was staged? While the answer to this may be impossible to give, in all its varying implications, we can at least give the following figures, and let the reader draw what conclusions he may from them:

The infant mortality rate of the 2,815 babies studied was 49 per thousand. That of Nassau County for 1923, the year of the active campaign, was 64. That of Nassau County for the years 1920, 1921 and 1922, the years preceding the experiment, was, respectively, 70, 67 and 78, with an average of 72. That of Nassau County for the year 1924, when the "hangovers" only were being visited, was 74. (That of Nassau County for 1925 is, of course, not yet available.)

Percentage of Breast Feeding for Each Month of Life

Month	Per Cent.	Month	Per Cent.
First	92.1	Sixth	70.1
Second	87.2	Seventh	66.3
Third	82.6	Eighth	63.2
Fourth	77.4	Ninth	59.6
Fifth	73.6		

The only other figures that I shall refer to here have to do with the effect on morbidity. Without giving a tiresome table, I will quote from the comment of the statistician on the table comparing the morbidity of children nine months breast fed with that of children less than nine months breast fed.

> The greatest difference is found, as would be expected, in diseases of the digestive tract; where the ratio is almost 3 to 1 in favor of breast feeding. Respiratory disease shows the next highest variation. Note especially the prevalence of pneumonia and bronchitis among the infants with limited breast feeding. These children are also more susceptible to infectious diseases, especially whooping cough, measles, and chickenpox. One third, or 37.1 per cent., of the children prematurely weaned became sick, as over against only one eighth, or 12.5 per cent., of those who were nine months breast fed. Three fourths, or 28.4 per cent., of these were weaned within fifteen days after birth. Thus the data prove quite conclusively not only that there is more sickness among children deprived of breast feeding, i. e., more widely distributed, but also that a higher percentage of these children are sick. There is sufficient evidence to show that the feeding which a child is given plays an extremely vital part in his claim on health.

When it is remembered that these conclusions were drawn, not by an overenthusiastic advocate of some one type of infant feeding, but by a trained statistician evaluating vital statistics, it seems fair to put even greater emphasis on them than might otherwise be justified.

These, and other far-reaching conclusions that will be published after more careful study of the data collected, are some of the immediate results. What of the more remote effects, for the production of which the New York State Department of Health staged this demonstration?

Late in 1924, requests for information began to come in from county medical societies throughout the state. As a result of talks by those who had had experience with the work in Nassau County, the city of Hornell, with a population of 5,000, began a campaign for universalizing breast feeding with the beginning of 1925, and at the end of six months, presents a preliminary report showing 84 per cent. of its babies (as compared with Nassau County's 70.1 per cent.) still on the breast, and 98 per cent. breast fed for one month (as compared with our 90 per cent.). In March of 1925, Ithaca, a city of 20,000 population, began a similar campaign. Other requests have been coming in, and in each case the request has come from the county medical society or the local academy of medicine. So far, with but one exception, every one of these requests for information has been followed by a definite assumption of a program similar to that laid down in Nassau County. The movement is spreading throughout the state faster than any one had dared to hope. So much so, that between the time when the title of this paper, "Universalizing Breast Feeding," was handed in to the secretary, and the time of its reading, its meaning and its implication have completely changed. Six months ago, the "community" referred to was Nassau County. Today, in referring to the community in which breast feeding bids fair to be universalized, and at no very distant date, we dare to mean the great state of New York.

102 Hanson Place.

ABSTRACT OF DISCUSSION

DR. MATTHIAS NICOLL, JR., Albany, N. Y.: Years ago I was a pediatrician, and I recall very distinctly that during my association of many years with one of the largest foundling hospitals in this country, most efficiently conducted and on whose staff were some of the most eminent children's specialists in New York City, not one infant, which from birth had been wholly artificially fed and remained in the institution, was sent out alive. On the other hand, the death rate among breast-fed babies, which constituted the majority, was exceedingly favorable. While we all recognize the fact that children's institutions of this kind present a special problem which exists to only a limited degree even among infants of the poorer classes living in their homes, the fact as presented seems to me a striking example of the life-saving properties of breast milk. In a recent survey made by the state department of health of a second-class city in New York State, very largely industrial and in which a great many women were employed in the various industries, some rather striking facts were brought to light regarding infant mortality. The figures were based on some thousand infant deaths during 1923. Approximately 30 per cent. of the deaths were among infants who were never breast fed, or for less than three months, constituting an infant mortality of 274. Twelve per cent. were breast fed from three to six months, with a mortality rate of 102, and 58 per cent. were breast fed for six months or longer, with an infant mortality rate of 3.4. The death rate from respiratory diseases was for the first group 64, for the second group 71, and for the third group 1.7 per thousand living births. As showing that breast feeding is not fashionable in these days, it was found that in those families in which the wage earners made from $15 to $25 a week, 68 per cent. were breast fed, as against only 58 per cent. of those in the higher income group. Breast feeding is not popular among native born women. It is kept up fairly constantly among the foreign born, and the habit can be revived among them with very little difficulty. Among American born women the task is apparently not so easy. It seems to me that the medical profession has not been guiltless in discouraging this natural and desirable method of infant feeding. There can be no question that with the comparatively recent development of scientific artificial feeding of infants the tendency of the medical profession, including pediatricians, has been to resort too readily to artificial feeding and with little or no attempt to encourage the mother to continue breast feeding. Dr. Richardson has shown what can be done by example, persuasion and hard work. The thought that breast feeding can be carried on for at least six months by the majority of mothers by very simple procedures, with which every practicing physician should make himself familiar, will probably be somewhat of a surprise to the average physician and unquestionably to a large number of mothers. The success of the breast feeding compaign which is now being taken up throughout the country depends on intensive instruction of individual mothers and convincing public demonstrations of the real value of breast feeding as a factor in saving infant lives and protecting them from a number of pathologic conditions to which the artificially fed infant much more readily becomes a victim.

DR. ROBERT A. STRONG, Hagerstown, Md.: Prior to 1869, the subject of artificial feeding was absolutely unknown. In that year Biedert, working under the inspiration of the chemical era of Liebig, began artificial feeding, which was rarely used, to the complete exclusion breast feeding before. It appears, then, that the feeding of babies with fabricated food is the result of modern civilization. I want to concur with Dr. Nicoll when he says that artificial feeding has done more to discourage breast feeding than any other factor. I am sure he will recall with me that up to a few years ago no program of a medical society was considered complete if it did not have at least one paper on artificial feeding of infants. More attention is being given breast feeding, however. One incontrovertible fact has been elicited and that is, regardless of the exact physiologic way that lactation begins, it depends for its maintainance on complete and regular emptying of the breasts. If the baby fails to do this in the act of suckling, it must be done otherwise. I am hoping that Dr. Richardson will demonstrate the technic of manual expression when he closes. This technic, learned to no small extent from the dairyman, is the keynote of the success with which supervised breast feeding is meeting in many sections of the country and which was demonstrated by Dr. Richardson in the Nassau County campaign. I want to endorse all that he has said. If a few more papers of this type appeared to broadcast such information, it is safe to assume that artificial feeding would soon become the curiosity that breast milk came near being before interest was aroused in saving it. I hope you will carry its message home.

DR. JULIUS LEVY, New York: It is hardly necessary to discuss the value of breast feeding. The important thing is to help to get it across. I think we should recognize in the propaganda of breast feeding two important things: First, that successful breast feeding is largely the mental attitude of the mother, rather than the nutrition of the mother. The placing of the emphasis on feeding of the mother has frequently made her feel that she could not nurse a baby. In order to establish right mental attitude, the proper time is before the baby is born. Permanent results are going to be obtained only by a well developed and organized program, and this should merely be the general program for maintaining the health and vigor of infants and children. That program must include prenatal feeding. The second group we have to deal with includes the obstetrician and pediatrician, and the midwives who deliver from 25 to 40 per cent. of all pregnant women. I should like to emphasize the danger of false statistics. The high percentage of mortality is on the first day, and it is not proper to publish statistics of infant mortality if we do not include the first day. Our children's bureau has prepared a fine set of charts showing the relation between infant mortality and income. It has always been my impression that it was really a relation between breast feeding and infant mortality. I hope that in publishing statistics the nativity of the mother will be brought out.

DR. FRANK HOWARD RICHARDSON, Brooklyn: The chairman has brought to our attention the rather interesting fact that even the most refined women do not object to the physician's drawing the perfectly scientific parallel between human and bovine milk-production. It greatly surprised me at first to find that this was the case, but it certainly is true that they

are quick to sense the analogy. It has been suggested that we must educate the profession in the advantages, as well as in the technic, of breast feeding. I have found the general practitioner an eager student of this simplest and best form of infant feeding, which gives him a workable and universally applicable system, in place of the cumbersome and frequently unsuccessful method that he was taught in medical school. The fact that many of the pediatricians and obstetricians have been less alert to adopt this natural method is to be seriously regretted. Two well known pediatricians said in the last year or two that there is absolutely no use in subjecting any woman to the "strain" of lactation; that artificial feeding has developed to such a high degree of perfection that breast feeding need no longer be employed. The method of expressing milk from the human breast is merely the adaptation to the smaller anatomy of the human breast of the dairy procedure of milking. The ball of the thumb and the ball of the index finger are placed on opposite sides of the breast, at a point just back of the pigmented areola. They are then brought nearly together, with the substance of the breast between them, and drawn forward at the same time, until a stream of milk is ejected by the pressure thus brought to bear on the reservoir just back of the openings of the ducts through the nipple. If one cannot squirt a stream 3 or 4 feet long from practically any breast, one has not learned the technic, and so, of course, cannot teach it to the mother, who is the one who must do this expression, as it is manifestly impossible for her to have a physician or a nurse go through this procedure every three or four hours. While the baby is the best milker, he is unfortunately anything but a conscientious "stripper," and will frequently refuse to finish his job while there is still plenty of milk in the breast. If he will not do this, the mother must do it for him by this manual expression just described.

THE RELATIONSHIP OF TUBERCULOSIS TO FISTULA IN ANO*

W. A. FANSLER, M.D.
Instructor in Surgery, University of Minnesota Medical School
MINNEAPOLIS

The relationship of tuberculosis to fistula in ano has long been the subject of considerable acrimonious discussion. At present there is a wide difference of opinion as to the extent of this relationship, reports varying from 1.4 per cent. to 70 per cent.

Andreal [1] states that in 1,592 cases of fistula in ano, 234 presented pulmonary tuberculosis either active or latent. He does not state how many of the fistulas were tuberculous in character. Gant [2] estimates that 10 per cent. of all rectal fistulas are tuberculous. Hartman states that from 10 to 14 per cent. of all patients with rectal fistula have active pulmonary tuberculosis, that 50 per cent. of all fistulas are tuberculous, and that 5 per cent. of all tuberculous patients have fistula. Dudley,[3] in a series of seventy-two cases seen at Bellevue hospital, found only one case tuberculous, or 1.4 per cent. Walsham [4] states that in 891 cases of pulmonary tuberculosis under treatment for three years there were only five cases of fistula and two of ischiorectal abscess. Thoss [5] reports that 5.5 per cent. of his fistulas were tuberculous from histologic examination, but that 11.9 per cent. were tuberculous from the point of view of the general physical findings. Gabriel,[6] on careful analysis of seventy-five cases, estimates that 20 per cent. are tuberculous. He relied on microscopic section and guinea-pig inoculation to confirm his diagnosis. In 701 cases, collected and reported by Pennington,[7] 14 per cent. were said to be tuberculous. Allingham estimated that 14 per cent. were tuberculous. Stone,[8] basing his opinion on his own series of thirty-seven cases and reports in the literature, mainly European, estimates that 10 per cent. of all cases are tuberculous. He also states that 42 per cent. of his patients had active pulmonary tuberculosis. This is certainly much higher than the usual number and could easily account for a 10 per cent. incidence of tuberculous fistula.

It will be seen from these reports that most of them are rather fragmentary and have not considered the question from all points of view. Likewise, the basis on which the diagnosis was reached has varied considerably. For instance, H. Kozucknoski states that a tuft of granulating tissue extending from the external orifice of the fistula definitely suggests tuberculosis. This is certainly untrue, at least in this country. A very large number of fistulas of long duration will show this condition, and histologic examination will reveal their simple inflammatory character. The more conservative group will not concede any fistula to be tuberculous unless a section is made that shows the definite microscopic picture of tuberculosis; namely, tubercle formation with giant cells, caseation, etc. This is too radical a stand, for there are some types of fistula from which the removal of a section is not justifiable. As a matter of fact, this is the very type in which I consider the diagnosis evident without a section. If we are to come to conclusions of practical value, it is necessary that every phase of possible relationship be considered, that we exercise reasonable conservatism in making our diagnosis, and that our cases be selected from widely distributed sources and not from some special group.

In such a general consideration, it would seem that the following questions should be answered:

1. What constitutes a tuberculous fistula and on what findings are we justified in making the diagnosis?
2. What percentage of fistulas are tuberculous?
3. In what percentage of cases is the tuberculous fistula the primary lesion, and in how many cases is it merely a secondary infection from a focus elsewhere in the body?
4. What percentage of fistulas occurring in tuberculous patients are tuberculous?
5. Does pulmonary tuberculosis have a tendency to cause fistula in ano?
6. Do simple fistulas occurring in nontuberculous persons indicate that the person has a tuberculous tendency?

Since there is such a variation of opinion concerning the occurrence of tuberculous fistula, it is necessary that we definitely state what is to be considered the tuberculous type. A number of writers feel that in tuberculous persons the original lesion of the bowel wall is produced by the tubercle bacillus, but that it is soon supplanted by the ordinary pyogenic organisms, which then form the abscess and fistula. It is well known that the tubercle bacillus frequently attacks the bowel lining, but whether or not the fistulas are caused in this way is really nothing more than a matter of conjecture. At the time of examination, only pyogenic organisms

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* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Andreal, quoted in Henry Smith's Surgery of the Rectum, 1881.
2. Gant: Diseases of the Rectum, Anus and Colon, Philadelphia, W. B. Saunders Company **1**: 393.
3. Dudley, G. S.: Ischiorectal Abscess: Its Etiology and a Method of Treatment to Avoid Fistula and Recurrence, Am. J. Surg. **35**: 365 (Dec.) 1921.
4. Walsham, H. D., quoted by Goodsall and Miles: Diseases of Anus and Rectum, p. 131.
5. Thoss: Rôle of Tuberculosis in Rectal Fistula, München. med. Wchnschr. **67**: 1440 (Dec. 10) 1920.
6. Gabriel, W. B.: Results of Experimental and Histological Investigation into Seventy-Five Cases of Rectal Fistula, Proc. Roy. Soc. Med. (Sec. Surg.) **14**: 156 (June) 1921.
7. Pennington, J. R.: Rectum, Anus and Pelvic Colon, Philadelphia, P. Blakiston's Son & Company, 1923.
8. Stone, H. B.: Relation of Anus to Tubercle Infection, Am. Rev. Tuberc. **1**: 548 (Nov.) 1917.

can be demonstrated in most cases. Likewise, as far as treatment is concerned, if at the time the case is seen it is one of simple pyogenic infection, we are not particularly concerned as to whether or not there was at some time past an original tuberculous lesion. On the other hand, if pathologic changes due to the tubercle bacillus are still going on, the method of treatment may vary considerably. Hence, in order to base our premises on definite and concrete facts and not on conjecture or deduction, it seems fair to define a tuberculous fistula as one which is caused by the tubercle bacillus and that the continuance or progress of the pathologic changes be due to that organism. This being true, on what grounds are we justified in concluding that the tubercle bacillus is the offending organism?

As has been stated, there are two distinct groups as to what findings justify the diagnosis of tuberculous fistula: the more liberal group, which relies on the clinical picture with a liberal interpretation, and the more conservative group, which insists in all cases on a histologic examination with the typical picture of tuberculosis. I feel that the guinea-pig inoculation or the finding of tubercle bacilli from the secretion or scraping the fistula leaves some slight room for doubt, unless it can be definitely shown that there is no tuberculous focus higher up from which they might come. It would seem to me that we are justified in making the diagnosis on clinical findings alone only when the type of lesion has the typical eaten out appearance of tuberculous ulceration, or at least the indolent appearing type of fistula with large openings having thin skinned, undermined edges. In all other fistulas, the diagnosis of tuberculosis is not justified without microscopic sections showing the typical histologic picture of tuberculosis.

With the foregoing as a criterion, what percentage of rectal fistulas are tuberculous? On this point there is the greatest variation of opinion. I believe that this is due to the different sources of material and different findings on which the diagnosis was considered permissible. In America, the estimate varies from 1.4 per cent., in Dudley's series, to 14 per cent. in Allingham's. In Europe, the percentage is much higher. Basing my diagnosis on the tenets previously laid down, I have found five cases of tuberculous fistula in a series of 204 cases. All of these were in patients suffering from pulmonary tuberculosis. Four had previously had this diagnosis made, and one case was discovered at the time the patient presented himself with the fistula. Hence, in this series, the percentage of tuberculous fistula is 2.5. These cases were taken as they came; there was no especially large number from any tuberculosis sanatorium or clinic, and I believe that this figure is somewhere nearly correct if we consider all existing rectal fistulas.

Gant says that 95 per cent. of persons with tuberculous rectal fistula also have tuberculosis elsewhere in the body. In other words, that in 5 per cent. of tuberculous fistulas the primary seat of tuberculosis is in the fistula. As far as my small series of cases is concerned, I have not seen a tuberculous fistula in which there was not a focus of tuberculosis elsewhere in the body. There are a few cases reported in the literature in which the primary lesion of tuberculosis is in a rectal fistula. One thing is certain and generally agreed on, and that is, that it is extremely rare. From my own knowledge of tuberculosis and conversation with men specializing in that disease, I seriously doubt whether the primary lesion of tuberculosis is ever a rectal fistula.

Assuming that fistula in ano is frequently seen in tuberculous patients, then how many of the fistulas are themselves tuberculous? I find nothing in the literature on this subject. The percentage of patients with tuberculosis having fistulas is noted, but as to the percentage of tuberculous patients having tuberculous fistula there is no comment. My own experience is too limited to draw any definite conclusion. Of twelve patients with fistula seen at the Glen Lake Sanitarium for tuberculosis at Minneapolis, one is definitely tuberculous and another possibly is. In this group of 600 tuberculous patients, probably 16.6 per cent. of the fistulas are tuberculous and 0.33 per cent. of tuberculous patients have tuberculous fistula as a complication.

It is rather generally thought that pulmonary tuberculosis has a special tendency to cause the development of fistula in ano. This is probably true; still, I doubt whether the mere fact that the person has tuberculosis is as great a factor as is generally supposed. Walsham states that in 891 cases of tuberculosis observed over three years, only seven persons (0.81 per cent.) had ischiorectal abscess or fistula. Meyer reports 0.87 per cent. in 460 patients. At the Glen Lake Sanitarium there are twelve fistulas in 600 patients, or 2 per cent. This is a rather frequent history of fistula formation, but the question is, How much higher is it than it would be in any group of chronically ill persons living under similar conditions? By this, I mean that many of these patients are bedridden, often have constipation, and are obliged frequently to resort to cathartics and enemas. Fistula frequently results from these very things; and in persons whose physical resistance is below par, a rather frequent occurrence of fistula is not to be wondered at. It would seem to me, then, that the tubercle bacillus cannot be given credit for all these fistulas or even the formation of the primary lesion in the rectal mucosa. The fact must not be forgotten that the patient's health and resistance are at a low level and that he is often bedridden and is subjected to unusual rectal trauma.

It is a general opinion that a rectal fistula indicates a tendency toward pulmonary tuberculosis. The stumbling block has been that it is not always possible to say which appeared first, the fistula or the pulmonary tuberculosis. A small lesion is easily overlooked by the ordinary means of examination, and even the methods of precision do not always reveal it. There are certain data, however, which would seem to indicate that very probably fistula in ano does, at least in certain types of persons, indicate the presence of a tendency to the development of pulmonary tuberculosis. On this point the medico-actuarial reports of our insurance companies are most illuminating.

Through the courtesy of Dr. O. H. Rogers of the New York Life Insurance Company I was furnished with the following statistics. In a group of persons 25 per cent. or more overweight with a history of fistula in ano, the mortality rate was normal for their group. It was concluded that fistulas in overweight persons were of no great significance. It would seem, then, that, in general, fistulas occurring in persons over average weight are almost always due to the ordinary pyogenic organisms.

In a group of persons 15 per cent. or more underweight with fistula in ano, the mortality was 134 per cent. As the light-weight element was of little importance, it was concluded that fistula was a decided factor in this high mortality rate. Out of thirty deaths in this group, thirteen, or 40.3 per cent., were due to tubercu-

lous disease. How many of the group developed tuberculosis, but recovered, is not noted. It is to be remembered also that this underweight group was a selected group—all had been operated on and their fistulas healed at least a year. They also had to pass the usual examination for life insurance. If every case of fistula in underweight persons were considered, the percentage of tuberculosis would undoubtedly be higher. The question may be raised as to whether or not these persons already had tuberculosis. This is hard to answer satisfactorily. Every one knows that a very high percentage of persons show healed lesions of tuberculosis. This group, at least, had no gross lesions as determined by ordinary physical examination. However, it does definitely show that a fistula in an underweight person should make us very suspicious of pulmonary or enteric tuberculosis. Every one should have a thorough physical examination before operation and periodically thereafter.

CONCLUSIONS

To sum up, then, what conclusions can be drawn concerning this condition, it is my belief that:

1. We are not justified in making the diagnosis of tuberculous fistula except by definite microscopic picture or in cases in which the lesion has the typical appearance described elsewhere in this paper.

2. Considering all cases of fistula in ano, it is doubtful whether more than 2 or 3 per cent. are tuberculous in character.

3. Tuberculosis is very rarely primary in fistula in ano. If it occurs at all it is not more than a small fraction of 1 per cent.

4. Probably 15 per cent. of fistulas occurring in tuberculous patients are tuberculous; 0.33 per cent. of tuberculous patients also have tuberculous fistulas. (These figures are based on a too insignificant number of cases to justify a positive statement.)

5. In view of the ease with which the tubercle bacillus affects the mucous membrane of the bowel, it would seem possible that in some cases—at least in tuberculous persons, in whom the fistulas appear to be a simple inflammatory process, that the original lesion in the bowel wall is due to the tubercle bacillus. However, this is purely a matter of opinion and has not been proved. In any event, it has but little bearing on the prognosis or treatment of the fistula.

6. It is probable that tuberculosis as such has a tendency toward the formation of rectal fistula, but that this tendency is not as great as is generally supposed. The general condition of the patient is also a decided factor.

7. It would seem that the formation of rectal fistulas in persons who are underweight is undoubtedly a definite warning of the presence of pulmonary tuberculosis or of a tendency toward its development. These persons are entitled to a most scrutinizing general examination, which, even if negative, should be repeated periodically.

531 La Salle Building.

ABSTRACT OF DISCUSSION

DR. L. A. BUIE, Rochester, Minn.: In the hands of general diagnosticians, the correct appreciation of rectal conditions is probably thirty years behind any other subject. Various theories are presented in textbooks or monographs on rectal diseases, and Dr. Fansler's presentation is no exception to the rule. I was taught in college that tuberculosis was the cause of practically all anal fistulas, and since I have been actively engaged in proctology I have learned that percentages have varied from 2 to as high as 90. Granted that we have a tuberculous fistula, I believe we have been observing too much conservatism in our treatment. Physicians feel that if patients have active pulmonary tuberculosis and incidentally a fistula, it is not right to operate on the fistula until most of the pulmonary disease has been overcome. After the abscess has been opened and sufficient fibrosis has taken place, which occurs in a variable period of time, the fistula should be attacked. With local anesthesia there is little or no strain on the lung, and the operation is not as devastating as is supposed. I think that one of the chief reasons why the operation for fistula is devastating is the lack of knowledge of anal anatomy. The internal opening of fistulas is rarely above the internal sphincter muscle. It is almost always in an anal crypt. It is true that the tract may go up alongside the bowel wall, but it does not mean that the internal opening is in the bowel wall. The man who first named fistula in ano was right; the fistula is anal and not rectal. An appreciable drop will be noted in febrile reaction, and possibly just sufficient load is removed to enable the patient to overcome the pulmonary lesion. I believe that tuberculosis is rarely associated with fistula in ano, and more rarely is there such a thing as a primary tuberculous fistula.

DR. COLLIER F. MARTIN, Philadelphia: A fistula is the result of an abscess. The moment an abscess is opened it becomes a fistula, because the infection that causes these abscesses does not originate from any internal cause. Rarely is a tuberculous abscess primary; therefore we should not have a primary tuberculous fistula. Practically all the abscesses are due to infections with staphylococcus, contaminated with colon bacillus, and further from streptococcus. I have seen only a few tuberculous abscesses, so-called "cold abscesses." I can recall only three which I would say were primarily tuberculous. In 1903 we were using the Pirquet test and got a positive reaction in 383 cases and a negative one in four cases. The four patients with negative reaction died of pulmonary tuberculosis. About 5 per cent. showed positive signs of quiescence. The rest were nonclinical; nothing could be discovered. Thirty-nine patients died within four years, practically 10 per cent., of tuberculosis. Only about half of these thirty-nine patients had been operated on. In practically all this series we used spinal anesthesia to try to avoid irritant effect of ether on the lungs. After we reviewed the figures we came to the conclusion that we could not calculate the percentage of cases that were tuberculous. There were only a few cases of what we would call clinically cold tuberculous fistulas, but we had many cases of fistulas in tuberculous subjects who were losing weight and who became more or less depressed, showing that some of this was due to lack of resistance and lack of power to build new tissue, not necessarily to any local infection. We should not overlook tuberculosis in that or any other condition. We should always be on the lookout for it. By lowering body resistance to infection by ordinary pyogenic bacteria, these abscesses develop. Secondarily the ulcerating fistulas become infected with tubercle bacilli and give the clinical picture. Fistula is a chronic abscess, a chronic infection, and may interfere with the patient's health. Many patients with tuberculosis are greatly benefited by operation. The exception would probably be those patients who are so terribly weighed down with their toxic condition that they have not any power to come back when they have been rid of part of their load. The majority of these patients are greatly improved by getting rid of at least one point of infection.

DR. RALPH W. JACKSON, Fall River, Mass.: My experience has convinced me that fistula diagnosis and therapeusis is almost "a specialty within a specialty." The varieties of anorectal fistula are legion, and some of the most difficult are the so-called tuberculous ones. Early in my special work I had the opinion, held by the general profession, that the vast majority of fistulas were either tuberculous or significant of tuberculosis elsewhere. As the years have gone, bringing me a considerable amount of fistula work, I have become convinced that the tuberculous cases are far less frequent; and, while I have no exact data, I think that not more than 10 or 15 per cent. of my patients could be suspected of being

tuberculous. In my experience such patients less often give a history of initial abscess, have a thin and milky rather than a frankly purulent discharge, and a general sluggish appearance and action; and from these symptoms one can approximate a correct diagnosis of the tuberculous character. As the years have gone, too, I have become convinced that tuberculous fistulas should be treated pretty much as any other type, and have had less fear of operating on them, except to avoid the possibility of irritating and aggravating a pulmonary complication. This means, of course, avoidance of general anesthesia, and working under local, or preferably spinal or sacral. After operation the diagnosis of tuberculosis often comes out even more clearly, for the incisions granulate and heal very slowly; but with good postoperative care the results are often as good as when there is no tuberculosis.

DR. W. A. FANSLER, Minneapolis: I hope the paper brought out two things: first, that the percentage of fistulas actively tuberculous is small; second, that presence of fistulas, at least in underweight persons, should be a definite warning of the possibility of pulmonary tuberculosis and that these patients should periodically have careful physical examinations.

THE NONSURGICAL MANAGEMENT OF PEPTIC ULCER BY THE "PHYSIOLOGIC REST" METHOD

RESULTS IN FOUR HUNDRED AND SEVENTY PATIENTS

FRANK SMITHIES, M.D.
Professor of Medicine, University of Illinois School of Medicine
CHICAGO

In May, 1916, I [1] proposed a regimen of nonsurgical management for selected instances of peptic ulcer (gastric and duodenal). It attempted to aline nonsurgical management with the facts which investigations in the clinical course, pathology, bacteriology and physiology of peptic ulcer had made available. To summarize, I emphasized that:

(*a*) In more than 95 per cent. of instances, peptic ulcer is a visceral lesion formed as a complication of a systemic, constitutional, toxic or environmental disturbance.

(*b*) A fundamental step in therapy demands recognition of the possible causative factors and an attempt at their eradication or alleviation, irrespective of any form of treatment to the visceral lesion; this necessitates intensive analysis of each ulcer subject.

(*c*) The clinical symptomatology of peptic ulcer depends largely on the manifestations of abnormal gastric and duodenal motor activity rather than on unphysiologically altered digestive chemism.

(*d*) Healing of peptic ulcer is facilitated best by assuring rest to the affected part, but owing to the properties peculiar to such ulcer bearing tissue, this rest must be "physiologic rest," i. e., secretory and motor activities both must be held in abeyance.

(*e*) By arrangement of general care, diet and, in certain circumstances, of medicinal agents, to meet the local pathologic and physiologic disarrangement, it is possible to assure physiologic rest to the ulcer site.

(*f*) It has not been proved that alkalization of gastric contents (so-called "continuous" or "intermittent") is necessary or is conducive to peptic ulcer healing, particularly when such alkalization is exhibited as a requisite "anticorrosive" remedy.[2] No reliable pathologic proof has ever been advanced showing that massive doses of alkali influence favorably the healing of peptic ulcer. Much proof exists that large doses of alkali actually interfere with ulcer healing by exciting "defensive" oversecretion of gastric juice, with resultant unphysiologic exhaustion of the secretory mechanism and by alkaline irritation of gastric and duodenal mucosae.

(*g*) Dietaries common to routine "ulcer cures" usually conform to no physiologic principle; particularly incompatible are such dietetic regimens in vogue when treatment by "continuous alkalization" is carried out.

(*h*) Frequent gastric lavage is unnecessary and often is harmful.

(*i*) Finally, there is evidence that, not rarely, peptic ulcer is, viscerally, a self-limited ailment, of peculiar "periodicity," whose "natural" remissions are, all too frequently, considered as dependent on special modes of management, even though such regimens differ widely in their theory of action and in their practice.

That many of these objections to the commonly practiced "ulcer regimens" voiced in my early communication were not unfounded is demonstrated by the changing trend of ulcer literature during the last decade. Vigorous protests against the efficacy of "rule-of-thumb" overalkalization therapy have appeared, notably, from Brown,[3] Lemon,[4] McVicar [5] and Friedenwald.[6]

I have seen no reason to alter the views expressed in 1916. The method advanced has proved practical and efficacious. The chief purpose of the present report is to submit the results that I have obtained. Limited space forbids details of the regimen that I suggested. The original and subsequent papers should be consulted.[7] The general care and the dietetic management are as follows:

Days 1 to 7 (time varies according to ulcer location, type and visceral irritation).—The patient begins treatment as a bed patient.

Feeding: By mouth, one-half ounce (15 c.c.) of warm water hourly when awake. Patient chews paraffin wax for fifteen minutes at least once in two hours. Juice of sweet orange or grapefruit occasionally.

By rectum, nutrient enema consisting of 50 per cent. alcohol, 1 ounce; glucose syrup, 1 ounce, and physiologic sodium chlorid solution, 6 ounces every four hours. The enemas are preceded by a cleansing irrigation of the colon with physiologic sodium chlorid solution. They are given at body temperature by the drop method at the rate of from 30 to 60 drops a minute. During the first two days, tincture of opium, 10 minims (0.6 c.c.), may be added if pain and spasm are severe.

Days 3 to 14 (case of average severity).—By mouth, from 4 to 6 ounces (120 to 180 c.c.) of water gruel at a temperature of 100 F. The gruel is taken slowly through a glass tube. Gruels are made from rice, cream of wheat, oatmeal, sago, corn-meal, cauliflower, beans, peas and boiled onion. They are strained before feeding. Flavoring with coffee, chocolate, vanilla, caramel, etc., renders the cereal gruels palatable and their administration easier. To the vegetable gruels, small quantities of arrowroot or corn-starch are added to secure a thin emulsion.

Before each feeding, paraffin wax is chewed for five minutes. Warm water or sweet orange or grapefruit juice are allowed as desired, but never taken in greater quantity than 1 ounce (30 c.c.) at a time.

By rectum, during the first two days of mouth feeding, two alcohol-glucose-saline nutrient enemas are given. During the second two days, one such nutrient enema is administered.

1. Smithies, Frank: Am. J. M. Sc. **153**: 547 (April) 1917.
2. Mueller, L., Das corrosive Gaschwür in Magen und Darmkanal, Erlangen, 1860.
3. Brown, Thomas: The Relative Rôles of Medical and Surgical Treatment in Gastric and Duodenal Ulcer, Tr. Sect. Gastro-Enterol. & Proctol. A. M. A., 1922, p. 141.
4. Lemon, W. S.: Northwest Med. **18**: 179 (Sept.) 1919.
5. McVicar, C. S.: Tr. Am. Gastro-Enterol. A., May 5, 1924, p. 204.
6. Friedenwald, J.; Gantt, W. H., and Morrison, P. H.; Ann. Clin. Med. **2**: 292 (March) 1924.
7. Smithies, Frank (Footnote 1); Significance of Etiologic Factors in the Treatment of Peptic Ulcer, J. A. M. A. **74**: 1555 (June 5) 1920; Am. J. M. Sc. **166**: 781 (Dec.) 1923; Ann. Clin. Med. **2**: 262 (Jan.) 1924.

After the fourth day of mouth feeding, no rectal feedings are given in the average case.

Days 14 to 21.—6:30 a. m.: A glass of hot water and 1 teaspoonful of noneffervescent sodium phosphate.

7:30 a. m.: One ounce of sweet orange or grapefruit juice, 2 ounces (60 c.c.) of thin cream of wheat, or farina, or well cooked rice, or corn-meal; 2 ounces of skimmed, parboiled milk may be taken with cereal, and if desired a small quantity of powdered sugar used; one zwieback with a thin layer of fresh butter, 4 ounces of parboiled, skimmed milk, containing half volume of lime-water, served warm and flavored with coffee, cocoa, caramel or vanilla.

9:30 a. m.: Six ounces (180 c.c.) of thin water gruel from cereals or fresh vegetables, strained and served hot; one rusk or zwieback, or dry toast.

11:30 a. m.: Four ounces of malted milk, whipped egg, with parboiled milk, corn-starch pudding, simple custard lightly cooked.

12:30 p. m.: Six ounces of potato, pea, bean, or asparagus purée (strained), or vegetable broth; 4 ounces of salisbury steak (moderately well cooked) to chew; 2 ounces (60 gm., cooked weight) of thin rice, sago, tapioca, or corn-starch pudding made with parboiled milk and egg yolk; 2 ounces of parboiled milk and a small quantity of pulverized sugar may be eaten with the pudding; one rusk or zwieback, 6 ounces of parboiled milk and quarter volume of lime-water flavored to taste.

4 p. m.: Four ounces of water gruel from cereals, one very soft, poached egg, one rusk or zwieback, 4 ounces of hot Vichy water.

6 p. m.: Four ounces of whipped egg, two rusks or zwieback, 6 ounces of malted milk (thin), flavored to taste, or cereal water gruel or parboiled milk and quarter volume of lime-water gruel.

9 p. m.: Six ounces of water cereal gruel or 4 ounces of malt marrow, two graham crackers.

Days 21 to 42.—6:30 a. m.: Two teaspoonfuls of sodium phosphate in a glass of hot water.

8 a. m.: Juice of one sweet orange or half sweet grapefruit, or boiled prunes passed through fine collander; 2 ounces (cooked weight) of thin cereals (cream of wheat, farina, oatmeal, corn-meal); 2 ounces of skimmed milk and small amount of powdered sugar; one soft poached egg; either two zwieback, two rusks or two thin slices of well toasted graham bread; 1 pint of hot skimmed milk plus a quarter volume of lime-water flavored to taste (cocoa, vanilla, etc.).

10 a. m.: One pint of hot parboiled whole milk and fifth volume of lime-water; two rusks or graham crackers.

12:30 p. m.: Four ounces of creamed soup from vegetables, strained; 6 ounces of rare meat to chew; 4 ounces of well mashed potato or baked potato (mealy inside), or carrot, peas, beans, cauliflower, Brussels sprouts or asparagus (all vegetables passed through a strainer and served with 15 gm. of butter); 4 ounces (cooked weight) of pudding from rice, corn-starch, sago, tapioca, cream of wheat or farina, or 4 ounces of custard, pulp of sweet orange, grape fruit or prune whip, or chew 6 ounces of watermelon or cantaloup; half pint of hot skimmed milk.

3:30 p. m.: One hundred and fifty cubic centimeters of hot whole milk and quarter volume of lime-water or 150 c.c. of malted milk or weak cocoa.

6:30 p. m.: Two rusks or zwieback or two slices of well toasted graham bread; two very soft poached eggs; 100 gm. of sweet apple sauce or one baked apple (omit skins), or juice of sweet orange or half of grapefruit, or chew 6 ounces of melon; 1 pint of skimmed milk, hot.

9 p. m.: Two hundred and fifty cubic centimeters of whole parboiled milk and quarter volume of lime-water or 250 c.c. of malted milk, hot.

General Diet for Three Months.—If distress, patient should go back to seven to twenty-one day diet.

7 a. m.: One pint of skimmed milk and half a gill of cream.

9 a. m.: Two pieces of toast without butter; juice of one sweet orange or grapefruit or ripe melon or apple sauce or baked apple (do not eat skin) or marmalade; one dish of well cooked cereal (oatmeal, farina or cream of wheat); two very soft poached eggs; 2 cups of hot, sweetened water. The water may be made more palatable by flavoring with cocoa, tea, coffee or cream.

11 a. m.: One cup of bouillon (two cubes); two graham crackers.

1 p. m.: This should be the heavy meal of the day. It may consist of meat (rare beef, rare hamburger steak, lamb or white meat of fowl), fish (never fried), oysters, well cooked spinach, cauliflower, carrots, squash, peas (hulled), string beans, Brussels sprouts, baked or mashed potatoes (in moderation), rice with gravy, simple puddings made from cereals, corn-starch, gelatin, well cooked fruit sauces, simple cakes, no white bread (all bread should be made from dark flour and should be at least one day old); 1 pint of skimmed milk taken hot.

4 p. m.: One glass of hot peppermint water (20 drops of "essence" of peppermint to the glass), sweeten to taste and drink slowly; two graham crackers.

7 p. m.: A light lunch consisting of vegetable soup, simple salad, toast, soft eggs, and plain puddings or cake, with or without ripe cooked fruit sauces; 1 pint of hot skimmed milk.

Bedtime, one glass of malt marrow, malted milk or hot skimmed milk.

Medicinal Management.—This consists chiefly in the exhibition of antispasmodics (atropin, tincture of belladonna, bromids) to control hyperperistalsis, orificial spasms, pain or nervous unrest. The average patient receives neither alkalis nor lavage. (For special indications one should consult my previous communications.[8])

REPORT OF RESULTS OF TREATMENT

The material analyzed in this study comprises 470 patients affected with ulcers as follows: 128 wholly gastric; thirty-six pyloroduodenal, and 306 duodenal. These patients form a group observed during the interval 1914-1924, but the group does not include patients studied between 1922 and 1924 since, on account of the nature of the ulcer problem, it is considered that patients under management for two years or less supply data that are not proof against critical analysis. Furthermore, this study does not deal with 302 patients who were regarded as subjects for surgical care and referred from our practice with that object. Thus, it will be evident that this report is concerned with a material judiciously selected. Elsewhere I have listed the factors that determine the clinical segregation of our peptic ulcer patients.[7]

General Results Following Peptic Ulcer Management by the Author's Regimen.—When a clinician follows any type of therapeutic management for any particular form of ailment in a considerable group of patients, over a number of years, he is in better position to secure the desired results than are those to whom the procedure is new or who manage only an occasional patient. Therefore, it follows that the results reported represent a degree of success possibly greater than others who apply my regimen will secure in their early endeavors. Until this method of peptic ulcer management has been tested by a considerable number of capable and observant physicians, on patients exhibiting every phase of ulcer symptomatology and pathology, and their results compared with results obtained by other procedures, we shall be unable to determine in just what particulars my mode of treatment is superior, clinically, to other methods in vogue. The accumulation of satisfactory data will require time, patience and intelligently directed effort.

However, apart from the recording of number of ulcer cures, the type of treatment which I suggest can claim to itself certain advantages, simply as a method:

(*a*) It brings peptic ulcer management into line with modern investigations in alimentary tract physiology and pathology.

(*b*) It seeks to recognize and eliminate or to alleviate the causative agents or conditions leading to the production and the continuance of ulcer.

(*c*) It permits handling of patients along reasonable lines and not according to set formulas, irrespective of the particular problem at hand.

8. Smithies, Frank (Footnote 1; Footnote 7, second reference).

(*d*) It is practical and safe, is easily instituted, and is carried out with minimum effort, in the home as well as in the hospital, without specially trained help and with little expense.

(*e*) It practically abolishes the necessity for frequent and prolonged use of the stomach tube—an advantage quickly appreciated by patients, nurses and physicians.

(*f*) If employed in institutions, the method saves much time for interns and nurses, since they are relieved of much routine, so characteristic of many ulcer regimens in vogue.

(*g*) It calls for the exhibition of but little medicine; particularly does it do away with the long continued use of disagreeable and expensive alkaline remedies.

(*h*) It removes from a class of patients the dangers possible from "continued alkalization," alkalosis—a real danger, as the work of McVicar [5] at the Mayo Clinic has shown.

(*i*) It permits, at all times, an accurate appraisal of the patient's true condition; one is not misled by false symptoms and signs due to the digestive anomalies caused by unphysiologic feedings, excess of medicine and effects of tubing and lavage. The patient is always in a condition in which motor test meals, fluoroscopic observations and stool blood tests can accurately be carried out.

(*j*) When the patient is affected with ulcer involving the cardia or the proximal fourth of the stomach, he is not exposed to tube trauma or to ulcer irritation by tubings which may (as in a number of cases under our care after other treatment had previously been given) rapidly carry forward ulcers to malignancy, severe hemorrhage or even perforation.

(*k*) It is particularly adaptable to the handling of those patients on whom gastric operations have been performed and in whose stomachs ulcers recur or gastro-jejunal ulcers develop. In this type of patient, gastric lavage rarely empties the dilated jejunal loops of poorly digested, stagnant food; in such circumstances, alkalis are of great annoyance, since, when administered, they pass rapidly from the stomach.

(*l*) Finally, by instituting the regimen only in selected groups of proved ulcers, and by not attempting its employment in unsuited instances in a wholly haphazard way (as has been the custom heretofore with nonsurgical regimens), prognosis is brighter: the patient enters on a course of therapy not with the attitude that the nonsurgical method is a sort of experiment to be tried (at great cost of time and money) as a preliminary to surgical treatment, but in a cooperative, optimistic spirit, highly conducive to the best results.

SPECIAL RESULTS OF THE "PHYSIOLOGIC REST" REGIMEN

1. *Time in Hospital.*—In our hospital cases, the average duration of incarceration was twenty-six days, a saving of nearly half the time and money required by the regimen advocated by Ewald, Schlutz, Sippy and others. Actual bed confinement averaged less than nine days.

2. *Control of Pain.*—In 40 per cent. of patients, all pain had disappeared within twenty-four hours of beginning treatment; an added 33 per cent. experienced pain relief within forty-eight hours; 8 per cent. required seventy-two hours; 15 per cent. almost ninety-six hours; in approximately 4 per cent., it was necessary to relieve pain by opiates. The last group consisted of ulcers whose extension had advanced to the serous layer of the stomach, or the ulcers were of the deep, fissured type, directly located at the pyloric or cardiac orifice. A total of 81 per cent. were subjectively comfortable in three days or less.

3. *Control of Excessive Gastric Secretion.*—Only when ulcers productive of great gastric irritability are located at or near the pylorus (on either side of the sphincter) need hypersecretion give concern. Much of the so-called hypersecretion associated with night distress is caused by overalkalization. It represents, chiefly, the attempt of the stomach to produce acid sufficient to neutralize the enormous doses of alkali given, and thereby to establish the normal, physiologic reaction of slight acidity or actual acidity common to gastric and duodenal mucosa. "Excessive secretion," night hypersecretion and their concomitants usually stop promptly when huge doses of alkali are stopped, diet as described by me initiated and "physiologic rest" established. Only 17 per cent. of our patients exhibited "hypersecretion" when treatment was begun, and in none of these patients was there the slightest evidence of it after the fourth day. Many of the clinical manifestations that are attributed to "hypersecretion" are subjective discomfort due to gastric hypermotility, gastric or duodenal spasms, or anatomic obstructions causing definite gastric stagnation. The subjective distress disappears when physiologic rest brings about visceral relaxation. In the true stenosis cases, medical management has no place other than palliative.

4. *Cessation of "Occult" Hemorrhage.*—Gross hemorrhage is accountable for a 4 per cent. immediate mortality. "Seepage," indicative of active histologic changes at the ulcer site, ceases within twenty-four hours after there has been brought about absolute visceral rest by my regimen. Of 41 per cent. of our ulcers exhibiting positive occult blood tests when treatment was begun, at the end of five days 92 per cent. of the patients' stools were blood-free. Slow disappearance of "occult" blood results from frequent gastric lavage, unsuited food, long maintained gastric spasms or from a type of ulcer undergoing malignant change, or of great size, progressive or extensively infected by actively proliferating colonies of cocci.

5. *Prevention of Perforation.*—Seven of our cases went on to actual perforation (1.5 per cent.). They were poor surgical risks at entrance, and were ulcers which, if seen earlier, would have been given the benefit of surgical measures. The frequently or the constantly bleeding ulcer makes up 62 per cent. of those patients showing actual or protected perforation at laparotomy or necropsy. Thus, gross hemorrhage almost automatically relegates an ulcer into the group that is immediately or potentially surgical. Of our 470 cases of peptic ulcer, we had no case go on to perforation while under treatment, except the seven mentioned above.

6. *Proof of Healing.*—In sixty-six patients who came to laparotomy for numerous intra-abdominal lesions, following institution of our ulcer management, completely healed scars were demonstrated in fifty-four, approximately 82 per cent. In the remaining twelve patients, malignancy, perforation, multiple ulceration or actual, benign ulcer activity were present. This highly gratifying result definitely proves that peptic ulcers can heal if given opportunity equal to that which the surgeon gives stomachs on which he has performed resection, excision or entero-anastomosis. Roentgen-ray proof of healing was shown in ninety-

four cases by disappearance of local ulcer tender areas on palpation during fluoroscopy, and by absence of inferential, motor phenomena characteristic for active ulceration.

Lengthening of Time Interval Between Attacks.—Such observation furnishes, from the patient's point of view, significant proof that satisfactory results are being secured. Previous to treatment, 162 ulcers gave an average time interval between attacks of five months. This group, after treatment, had a lengthened symptom-free period of an average of rather more than thirty months in those cases in which symptoms recurred. Dyspepsia-free intervals averaging eleven months were recorded in 234 cases before treatment; it lengthened to thirty-seven months as an average after treatment. Thirty-two patients before treatment had had quiescent periods averaging nineteen months; after treatment, those on whom we have reports had increased to an average of forty-four months. On forty-four patients we have no accurate data relative to the incidence of dyspepsia-free intervals. In this group, twenty-three cases have gone for longer than three years without recurrence.

Recurrences.—For the whole series, this was noted in 14 per cent. (sixty-six cases). The recurrences were of an ailment like the primary one, and clinical and roentgen-ray proof was available showing that the visceral upset was at the site of the initial lesion. Twenty-eight cases "recurred" from one to five times; this probably indicates that these patients, ultimately, will come to operation.

Permanent Cures.—Of the whole group, 470 patients in their present status, there is justification for claiming cessation of the ulcer process in 361, or 77 per cent.

1002 North Dearborn Street.

Clinical Notes, Suggestions, and New Instruments

PERNICIOUS ANEMIA WITH DIABETES; LEUKEMIA IN DAUGHTER

CARL SCHUMANN, M.D., UTICA, N. Y.

Three cases of pernicious anemia with diabetes mellitus have been reported by S. F. Adams.[1] These constituted the only ones in a five year period at the Mayo Clinic, including approximately 1,000 cases of pernicious anemia and 2,000 cases of diabetes mellitus. Another case is reported herewith. The patient died from pernicious anemia in March, 1925, eighteen months after she first came under observation. As in Dr. Adams' cases, insulin was used, but instead of proving useless, adequate response was obtained, probably because it was a milder type or was discovered early enough.

REPORT OF CASE

History.—A woman, aged 55, the mother of four healthy grown-up children, had always been in robust health up to her fiftieth year. In September, 1923, when she first came under observation, she had a fairly severe attack of influenza. The same year the menopause occurred, without noteworthy disturbance. In February, 1922, she underwent operation for perineal repair and uterine displacement, with removal of the appendix. If the anemia or the diabetes had been present then they would probably have been discovered. Thrombophlebitis involving the left lower extremity occurred after the operation, eventually subsiding completely. The family history was completely negative for blood dyscrasias and diabetes. A brother died three years previously from carcinoma of the esophagus.

Physical Examination.—An intense anemia of the skin and mucous membranes was striking, with a slight yellowish tinge of the skin and sclerae. Nutrition was good; there was no evidence of emaciation. The thoracic and pelvic viscera were not abnormal. The abdomen presented a postoperative scar in the midline below the umbilicus. The liver and spleen were neither enlarged nor tender. No tumor nor tender areas were present. All reflexes were present within normal limits. All the teeth had been extracted. No lesions of the tongue or mouth existed. A moderate elevation of temperature and pulse was present for a few days. There was pain and moderate tenderness in the lower thoracic and lumbar spine.

Debility was pronounced, with thirst, polyuria, anorexia, some nausea, occasional regurgitation or vomiting of the stomach contents with or without food, and moderate diarrhea. Nourishment could be taken only in small amounts. Tongue symptoms were late in the course, and were never very pronounced nor troublesome. The central nervous system symptoms were pronounced and persistent: headache, not relieved by ordinary remedies; insomnia; backache, lower thoracic and lumbar; girdle sensation; tingling and numbness of the hands and feet, and pain in the toes at times.

Roentgenologic gastro-intestinal examination revealed a contracted stomach emptying within four hours, but nothing further of note.

The urine was clear and acid. The specific gravity was 1.024. Examination disclosed no albumin; a large amount of sugar; no acetone or diacetic acid; diastase, 50 units; no casts.

Examination of the blood revealed: Wassermann reaction, negative; sugar, 0.222 mg.; hemoglobin, 35 per cent. (Tallqvist); erythrocytes, 1,200,000; leukocytes, 6,400. The erythrocytes showed many microcytes and macrocytes, some polychromatophilia, considerable poikylocytosis and anisocytosis, a few punctate cells, and one nucleated red cell. Differential count of the leukocytes revealed: small lymphocytes, 43 per cent.; transitionals, 2 per cent.; polymorphonuclear neutrophils, 52 per cent.; eosinophils, 3 per cent. The color index was 1.4.

The stools were negative for occult blood, ova and other abnormalities.

Insulin was administered once daily. In ten weeks, glycosuria and its symptoms had disappeared. They did not recur. The only dietary restrictions, because of the small quantity of nourishment taken, were exclusion of all foods containing sugar. Later these were again permitted to be taken, without recurrence of glycosuria. The anemia ran the usual course. Temporary improvement followed the first two transfusions of 500 c.c. of blood. Later, even larger transfusions gave little benefit. Repeated erythrocyte counts ranged from 1,200,000 to 2,600,000; the character of the red cells never showed decided changes. Nucleated cells were not always found.

LEUKEMIA IN DAUGHTER

The literature on familial blood dyscrasias, even the most recent, is quite silent on the occurrence of pernicious anemia and leukemia in members of the same family. I have reason to believe that it has been observed but that reports have not been published. The possibility of a common etiologic factor was thought of in connection with this case; no evidence of this was to be found. The leukemia was of the splenomedullary type in the 27 year old daughter of the patient. The onset was apparently acute. No evidence of the disease was present during the preceding two years, when she had been examined for other ailments. A pyuria had been found in these preceding observations, which appeared to be caused by a pyelonephritis, judging from the urinary findings. Consent for cystoscopic examination had not been obtainable. The only symptoms produced by the leukemia were indefinite epigastric distress and debility. The spleen extended down to the true pelvis and to the midline. Blood examinations revealed: hemoglobin, 40 per cent. (Tallqvist); leukocytes, 420,000, myelocytes predominating; erythrocytes, 2,600,000. Roentgen-ray therapy resulted brilliantly, with apparently complete restoration of the spleen to normal size, leukocytes normal in numbers and types, with gain in weight and strength.

1. Adams, S. F.: M. Clin. N. Am. 8: 1163 (Jan.) 1925.

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SATURDAY, AUGUST 29, 1925

THE NEW PHARMACOPEIA

The United States Pharmacopeial Convention met in Washington in May, 1920, and appointed a committee to revise the Pharmacopeia of the United States. The committee has now completed its work and the new Pharmacopeia was placed on sale, August 15. Since the new book does not become official until Jan. 1, 1926, an interval of four and one-half months is allowed for physicians to become familiar with the changes and for pharmacists to dispose of their stocks made according to the present book, the U. S. Pharmacopeia IX. The responsibility for the scope of the U. S. P. X was placed on the twenty-one physicians on the committee; i. e., on those having the degree of doctor of medicine. Consequently, the new book should more nearly represent rational medicine than some of the preceding revisions in which pharmacists and pharmaceutic manufacturers largely controlled the situation. From the standpoint of the clinician, the most noteworthy feature of this revision is the small number of admissions as compared with the large number of deletions. Only forty new drugs and preparations are added, while 192 have been deleted. This change, important though it is numerically, is of even greater significance than the numbers alone connote, for the new drugs, with a few exceptions, are substances that give promise of being useful additions to our materia medica, while the deleted drugs are either little used or comparatively worthless, or are therapeutically better represented by others in the book. Of the added drugs and preparations, thirty-one are already described in New and Nonofficial Remedies. Many of the tests and assays for these were previously worked out in the American Medical Association Chemical Laboratory and now appear in the official publication of the Council on Pharmacy and Chemistry. The most important additions are acetylsalicylic acid, benzocain, ethyl chaulmoograte, amidopyrin, the silver proteinates, arsphenamin, neo-arsphenamin, barbital and its sodium compound, barium sulphate, carbon tetrachlorid, dichloramin, epinephrin, phenobarbital, procain hydrochlorid, quinidin sulphate, quinin ethylcarbonate, sodium biphosphate and surgical solution of chlorinated soda. Of the nine additions not in New and Nonofficial Remedies, two titles, ipomea (Mexican scammony) and its resin, represent a substitution of the Mexican drug and its resin for the Turkish drug and its resin, which were described in the U. S. P. IX and which are not now readily obtainable. Among the additions, that of Rhus glabra and its fluidextract will add little to the prestige of the book. The addition of whisky and brandy may be criticized by many, but extensive prescribing perhaps warrants the inclusion. The elimination of eleven extracts and of twenty-seven fluidextracts is in keeping with modern prescription practice. The omission of such substances as arnica, calcium hypophosphite, cerium oxalate, coriander, grindelia, hops, lactucarium, three lithium salts (bromid, carbonate and citrate), matricaria, prickly ash, musk, parsley, pepper, saw palmetto, stillingia, sumbul and taraxacum is a distinct aid to scientific medicine. The alkaloids morphin and strychnin have been deleted, but these are better represented by their soluble salts. The retention of sarsaparilla will be regretted by progressive clinicians.

Physicians and pharmacists will welcome the effort that has been made to simplify the names. For comparison, a few examples of Latin titles are given in parallel columns:

U. S. P. IX	U. S. P. X
Acidum Phenylcinchoninicum	Cinchophenum
Balsamum Tolutanum	Tolu
Hexamethylenamina	Methenamina
Hypophysis Sicca	Pituitarium
Liquor Hypophysis	Liquor Pituitarii
Saccharum	Sucrosum
Saccharum Lactis	Lactosum
Serum Antidiphthericum Purificatum	Antitoxinum Diphthericum
Thyroideum Siccum	Thyroideum

As was noted in a previous editorial in THE JOURNAL,[1] the biologic assays have been greatly amplified so that instead of two drugs and their preparations for which bio-assays were required in the U. S. P. IX, there are now eight which must be standardized by these methods. These are aconite and its tincture, cannabis and its fluidextract, digitalis and its tincture, solution of epinephrin hydrochlorid, ergot and its fluidextract, solution of pituitary, squill, its fluidextract and tincture, and strophanthus and its tincture. Because of the difficulty in preparing standard samples of these drugs which will be of uniform strength, the Bureau of Chemistry of the United States Department of Agriculture is prepared to furnish samples of standardized preparations to manufacturers for adjusting the activity of new lots. It is believed that the obligatory bio-assays will result in greater uniformity and dependability of the market supplies of these hitherto unsatisfactory drugs.

The changes in the strengths of three mercurials should be especially noted by prescribers. Formerly

1. The Forthcoming United States Pharmacopeia, J. A. M. A. 83:923 (Sept. 20) 1924.

the 50 per cent. ointment of mercury, employed as a means of systemic administration of this drug by inunction, was known as Unguentum Hydrargyri, and a 33 per cent. ointment, intended to be used as a local remedy in parasitic conditions of the skin, was known as Unguentum Hydrargyri Dilutum. The name of the latter has been changed to Unguentum Hydrargyri, while the form intended for absorption is called Unguentum Hydrargyri Fortius. The new ointment of mercury, therefore, is made with a base not intended for easy absorption through the skin, but for its immediate local action, and when the physician desires the constitutional action of mercury, he should prescribe Ung. Hydrarg. Fort. The ointment of yellow mercuric oxid (Unguentum Hydrargyri Oxidi Flavi) has been reduced from 10 per cent. to 1 per cent., in conformity with the customary practice of today.

The unit of measure is the cubic centimeter (abbreviation cc.), which replaced the milliliter (mil) of the U. S. P. IX. The change from cc. to mil in the previous revision never became popular in this country. Prescribers and dispensers will doubtless be glad to see the old familiar cc. again. The official abbreviation for gram remains "Gm.," but cubic centimeter is abbreviated to "cc."

While the new book has erred in the retention of some drugs of doubtful worth, it represents the trend of therapeutic thought much more completely than any of its predecessors or any of the foreign pharmacopeias now official.

THE DIABETIC CHILD

Every physician to whom the care of diabetic children has been entrusted must have felt deeply something of the despair that the futility of his therapy was likely to bring about a few years ago. It is true that medical attention tended to prolong the lives of the youthful patients and thus promote the hope of relief that the spark of life tends to maintain. Unfavorable prognosis in the case of a person who has already filled a goodly number of years is, of course, distressing; but it lacks much of the pathos inherent in the hopeless outlook for a life that should ordinarily still be endowed with the potentialities of growth and development—with the engaging possibilities of real accomplishment. Prior to 1921, the prospect of gain in size on the part of the diabetic child was small indeed; fortunate was the adolescent who could cling to a frail life for a few discouraging months, except in the cases of those whose disease was of the mildest nature. The introduction of the therapy of undernutrition doubled the children's lives at the expense of their weights.

The advent of insulin has brought a change of outlook; it augurs better. The experience of Joslin[1] and his co-workers in Boston is doubtless indicative of what is happening in many parts of the world. The gain in weight of the diabetic child treated with insulin resembles that of the normal youth. The child may be underweight for its age, though not necessarily for its height. Furthermore—and this is of the highest physiologic import—there appears to be something more than mere increase in size: development apparently proceeds in the direction of real maturity. It is perhaps too early in the history of insulin therapy to determine to what extent sexual unfolding approaches the normal. As Joslin remarks, the endocrinologist will have an unusual opportunity to make his contribution to this feature, along with the pediatrician and the dietitian, on whom the responsibility for the diabetic child has heretofore solely rested.

The worth-while future of the undeveloped diabetic patient depends fundamentally on a real regeneration of the lacking pancreatic tissue; otherwise, continuance of life means merely a precarious existence in the "diabetic danger zone." The evidence is still too meager to warrant prophecy, though there is nothing to gainsay the possibility of some success. The Boston clinicians, whose judgment surely is tempered by a long and unusually extensive acquaintance with the situation, are not pessimistic. As they express it, "the prognosis of the diabetic child treated with insulin is still problematic; but clinical, therapeutic and pathologic evidence sets no bounds."

1. Joslin, E. P.; Root, H. F., and White, Priscilla: The Growth, Development and Prognosis of Diabetic Children, J. A. M. A. 85: 420 (Aug. 8) 1925.

CEREALS AND EXPERIMENTAL RICKETS

Cereals occupy a prominent position in exemplary diet lists for older infants and children, and of all cereals oatmeal, because of its availability and content of vitamins, calcium and phosphorus, has been most strongly advocated. Recent research by Mellanby[1] calls attention to the lack of antirachitic vitamin in this food substance. Mellanby used puppies in the feeding experiments, controlling the exact amount of food taken by each animal. In several series of experiments the basic diet (powdered separated milk, meat without fat, orange juice, yeast, sodium chlorid and olive oil) was supplemented by various cereals, and the growth and health of the puppies were observed. Roentgenograms of the long bones were studied for evidence of the onset and development of rickets. When death ensued or the animals were killed, the histologic appearance of the long bones and their relative content of calcium were determined as additional evidence of the severity of the rachitic process.

By each criterion, puppies receiving oatmeal with the basic diet developed more marked and earlier rickets

1. Mellanby, Edward: Experimental Rickets: The Effect of Cereals and Their Interaction with Other Factors of Diet and Environment in Producing Rickets, London, His Majesty's Stationery Office, 1925.

than those receiving the cereal component from other grains. Barley and wheat germ were found to favor the production of rickets as compared with rye, rice and white flour, but in a much lower degree than did oatmeal. The results were the same whether the oatmeal was given as ground oats, porridge or groats (hulled and crushed oats). The development of rickets was directly related to rapid growth. As the rickets became severe, there was a marked loss of appetite with a reduction of cereal intake, whereupon the rickets tended to improve. The most rapid early growths were recorded for the puppies eating oatmeal; and, as has been indicated, these animals developed severe cases of rickets, coincidently ceased to eat their full ration of cereal, and improved as the cereal intake was reduced. To a less marked extent, the same cycle was observed in the puppies fed wheat-germ for the cereal content of their diets.

The relation between rapid growth and the development of rickets is also emphasized by Eliot [2] in her paper read before the Section on Diseases of Children at the last session of the American Medical Association in Atlantic City. Dr. Eliot believes that rapidly growing breast-fed babies seldom escape some degree of rickets, and that cod liver oil should be given as a routine to breast-fed as well as to artificially fed babies in larger doses than have been in favor.

Mellanby found that the rachitic effect of cereals was at first lowered and then completely offset by substituting increasing increments of cod liver oil for the olive oil in the diet. When butter made up the fat ratio, it protected the animal from rickets due to the less desirable cereals only in case the calcium content of the diet was high. Separated milk with butter offset the rachitic tendency to a degree not accounted for by its calcium. The effects of vegetables in promoting calcium deposition in bones, and particularly in offsetting the more maleficent cereals, were in relation to their content of antirachitic vitamin. Irradiation of the puppies with ultraviolet rays, or of the cooked or uncooked cereal, nullified the effect of the rickets-promoting factor.

The nature of this factor has received the attention of the investigator, and both arguments and experiments are adduced to indicate that the carbohydrate, mineral, protein and nucleic acid fractions are innocent, and that the harmful factor rests in the saponifiable portion of the grain. Some noxious quality of cereals has been postulated in connection with maize in the diet of pellagrins, and oatmeal and other grains in the development of carious teeth.[3] The ubiquity of rickets, and the multiplicity and intricacy of the known causative factors, lend great interest to these investigations.

2. Eliot, Martha M.: The Control of Rickets, this issue, p. 656.
3. Mellanby, M.; Pattison, C. L., and Proud, J. W.: Effect of Diet on the Development and Extension of Caries in Teeth of Children, Brit. M. J. 2:354 (Aug. 30) 1924.

LAWLESS LAW ENFORCEMENT

Recently the collector of internal revenue at Nashville refused to register under the Harrison Narcotic Act twenty-five physicians who were under indictment for alleged violations of it. In 1922 a court of competent jurisdiction decided that a collector had no right to refuse registration under such circumstances, and the Bureau of Internal Revenue took no appeal from that decision. At that time the United States District Court for the Northern District of Georgia [1] thus disposed of the collector's claims:

> But to prohibit a practicing physician from prescribing narcotics unless he registers, and then to refuse to register him, would, to that extent, be to prohibit and regulate his practice of medicine, a thing within the province of the state, and not of the United States, and in contradiction of the revenue purposes of the act. . . . The determination of who may properly practice medicine or otherwise dispense drugs belongs to the agencies of the state. The collector must register on proper application all who are by the state law permitted to dispense them. He has no discretion in the matter.

In the present instance, the United States District Court of Nashville promptly arrived at a similar conclusion and directed the collector to register the Tennessee physicians. For the trouble, expense and undesirable publicity incident to the court proceedings, however, these physicians have no redress. Available reports do not disclose the nature of the offenses with which they were charged, the character of the evidence on which they were indicted or their professional standing. Their guilt or innocence can and should be promptly settled in an orderly course of judicial procedure. If they are convicted, lawful penalties can be enforced. But as was made perfectly clear by the court in the Starnes case cited, and as should have been known to the collector of internal revenue at Nashville, these matters have nothing to do with registration under the Harrison Narcotic Act. Referring to an order issued by the Commissioner of Internal Revenue to withhold registration from indicted or convicted persons, in that case the court said:

> The instruction of July 26, 1921, was not made by "the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury," and so (was) not authorized by the act; but, if it were, in attempting to make a pending charge of crime a ground for refusing registration, it would be unsustainable. Even after the conviction, to do so would add a deprivation of vocation to the punishment fixed by law. Prior to conviction there is only an accusation of which the registrant is presumed to be innocent.

The decisions of the courts in the Georgia and Tennessee cases do not leave collectors of internal revenue helpless. They merely refer them back from lawless methods to lawful ones. If a collector has evidence that a physician has violated the Harrison Narcotic Act or the narcotic act of any state, he can institute prosecution in the proper federal or state courts. If a collector has evidence that a physician

1. Starnes v. Rose, Internal Revenue Collector, 282 Federal Reporter, 336.

is unfit to practice medicine, he can file complaint with the licensing board of the state by which that physician was licensed. If the collector regards these measures as inadequate, he can appeal through proper channels to the proper legislative bodies to amend or supplement the Harrison Narcotic Act or the medical practice or narcotic acts of the state.

The law, however, does not authorize a collector to use his own judgment to remedy what he may regard as defects in federal and state legislation. Such a procedure is not merely a trespass on the rights of the physician; it is an attempt unlawfully to infringe on the constitutional rights of the state itself. Such occurrences tend to break down the harmonious relations between the federal government and the states and to increase the odium already attached to the word "bureaucracy." The Harrison act penalizes the physician who fails to conform; what redress does it offer him when he loses time, money or professional standing through the misguided autocratic methods of those whom the government selects to enforce it?

Current Comment

LONG ISLAND JOURNAL ADOPTS COUNCIL STANDARDS

Year by year the Council on Pharmacy and Chemistry continues its efforts for the rational use of drugs. Carried on with the unselfish gift of time and thought by Council members, this work represents a devotion to professional ideals that should arouse the enthusiastic support not only of all physicians but of other scientists and laymen as well. Slowly but surely such recognition is coming. The resolution endorsing the Council's work, signed by every member of the House of Delegates at the San Francisco session in 1916, is only the official record of the increasing support and encouragement being given by individual members of the profession. On such support the Council must, in the last analysis, depend for the complete success of its efforts. Practically every medical journal of standing refuses today to accept advertisements of pharmaceutic preparations that have not met the Council's requirements. In this THE JOURNAL is naturally the pioneer, but its lead has been followed by all official organs of the various state medical associations, with the notable exception of the *Illinois Medical Journal*. The difficulty of financing a strictly professional journal is, no doubt, in a great measure responsible for the failure of some publications to close their advertising columns to any but Council accepted pharmaceutic products. That the best of these journals, however, desire to support the Council is shown by a letter just received from the business manager of the *Long Island Medical Journal* announcing the arrival of the hopefully anticipated time when his publication could afford to solicit advertising only from manufacturers of products that meet Council requirements. This journal is the official organ of the Associated Physicians of Long Island. It is a welcome addition to the ranks of supporters of the Council's efforts for the prevalence of rational therapeutics. Henceforth only such pharmaceutic products as are accepted for inclusion in New and Nonofficial Remedies will be advertised in the Long Island publication. If physicians will limit their prescriptions to such products in addition to those that are in the Pharmacopeia, medical publishers and progressive manufacturers will appreciate the encouragement.

AMERICAN INFLUENCE ON MEXICAN MEDICINE

American physicians may read with interest and pride the recent collection of papers from the Valdés clinic in Mexico.[1] Among the subjects discussed are carcinoma in the cervical stump following supravaginal hysterectomy; tonsillectomy; indications for sterilization in cesarean section; diagnosis in surgery; shock; pygomelus; Billroth I; primary carcinoma of the appendix; surgical bearing of anomalies of the gall-duct; blood transfusion, and bladder diverticula. In the first paper, Dr. Ulises Valdés, chief of the clinic, sketches American influence on the progress of Mexican medicine. The Aztec surgeon dwells on the recent change, which has substituted American ideas for European, and especially French, conceptions. This change is reflected in the reading of physicians across the Rio Grande. Their libraries, we are told, are now filled with American textbooks, while, heading the list of medical publications, is the Spanish edition of THE JOURNAL. His generous tribute to American medicine is welcome. In acknowledging it we may borrow from his own eloquent statement: "Surgeons need no longer cross the ocean in search of new teachings and methods. All scientists are brothers."

A GREAT NEWSPAPER PUBLISHER DIES

In the recent death of Victor F. Lawson, publisher of the Chicago *Daily News*, the cause of public health has suffered as great a loss as has that of clean journalism. As one of the greatest newspaper properties in the United States, if not indeed in the world, the *Daily News* carries, and has for years carried, an enormous amount of advertising. About ten years ago much of the "patent medicine" advertising in the *Daily News* was open to serious criticism. A letter written to Mr. Lawson from the headquarters office of the American Medical Association calling his attention to the character of some of the "patent medicine" copy resulted in a drastic change in the methods governing the acceptance of advertisements of this type. Mr. Lawson immediately went to the expense of having analyses made of scores of "patent medicines" whose advertisements were offered to the *Daily News*. The chemists' reports were then turned over to his personal physician, who passed on the therapeutic claims made for the products in the light of the composition as shown by the analyses. If the physician's report was

1. Anales del Sanatorio Valdes **1**, 1925, Mexico, D. F.

unfavorable, as in many, many instances it was, the advertisement was turned down. Mr. Lawson's physician was in constant touch with the Bureau of Investigation (Propaganda Department) of the American Medical Association, getting from it all the available information regarding widely advertised nostrums. While some of the medical advertisements in the Chicago *Daily News* are still open to criticism, the paper can fairly be classed as one of the cleanest in medical "copy" in the United States. More recently—in fact, just before his death—Mr. Lawson lent his personal interest and the service of his paper to the investigation and exposure, made by the Bureau of Investigation of the American Medical Association, of firms selling spectacles by mail. He established ideals which should inspire other editors and which, it is hoped, will continue to lead those responsible for the Chicago *News* in the future.

LOSS OF WEIGHT IN HOT AIR BATHS

Changes in body weight are not infrequently made the subject of concern for the physician. Usually his problem in this connection refers either to averting a loss of weight that is threatened by the ravages of disease or to the production of substantial gains during the years of adolescence and even later. Sometimes, however, he is expected to reduce body weight, particularly when it has advanced to the development of an unseemly figure. What the physician may be unwilling to advise in an attack on obesity is frequently undertaken without a qualm of conscience by one of the now numerous "physique specialists," who thrive on the mental, physical and esthetic discomforts of the obese. Among the schemes that enter into the "reduction treatments" are recommendations that inevitably lead to losses of water—and consequently decrease of weight—in the body. How striking and considerable they may be is shown in recent observations on the physiologic effects of hot air baths.[1] Exposure of the nude person to dry hot air for periods of an hour or more have led to weight losses of more than 600 gm. an hour. This is in striking contrast to the normal loss of 40 or 50 gm. an hour in room air. The difference on exposure to the hot air bath has been demonstrated to be due almost exclusively to the increased amount of visible perspiration rapidly removed by the hot, dry atmosphere. Inspection of the actual changes in metabolism showed only minor increases in the oxidation of body tissues following exposure to hot air. There is some increase in the temperature of the peripheral tissues; and consequently some stimulation of cell activity there may be assumed to occur. However, the augmentation of the metabolism amounted at most to 10 per cent. after a sojourn of from one to one and one-half hours in a hot air bath, whereas the loss of water was greatly accelerated. The drop in body weight may delight and encourage the candidate for reduction—until he discovers how easily water can be restored to its accustomed haunts in the body.

1. Benedict, C. G.; Benedict, F. G., and Du Bois, L. F.: Some Physiological Effects of Hot Air Baths, Am. J. Physiol. **73**: 429 (July) 1925.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Health Officers' Meeting.—The sixth annual conference of county health officers of Alabama will be held at Montgomery, September 7-9. The subjects will be "The Control of Communicable Diseases," "Morbidity Reporting from the Health Officers' Point of View," "A Registration Area for Morbidity" and "The Evaluation of County Health Work." Among others, Dr. Samuel W. Welch, state health officer, Dr. John A. Ferrell of the International Health Board, and Drs. Leslie L. Lumsden and Joseph W. Mountin of the U. S. Public Health Service, will speak.

CALIFORNIA

Personal.—Dr. Beverly T. Young has been appointed health officer of Maricopa, to succeed Dr. Daniel W. Sooy.——Dr. W. H. Gatchell has been appointed health officer of the newly incorporated city of San Carlos in San Mateo County.

Society News.—Dr. Roscoe G. Van Nuys addressed the Alameda County Medical Society recently on "Living Anatomy: A Roentgen-Ray Study of Stomach, Liver and Colon in One Thousand Healthy Adults," and Dr. George Dock, Pasadena, addressed the Orange County Dental Society on "Focal Infection."

State Board Must Grant License.—Dr. Nathan P. Levin was granted a writ of mandamus by the state district court of appeals, July 30, which compelled the state board of medical examiners to grant him a license to practice medicine in California. The board had refused, it is reported, to grant a license on the ground that Levin had not complied with certain technical provisions of the state law.

Health Meetings at Long Beach.—The annual convention of California health officers and the regular Conference of Pacific Coast Health Officers will be held, September 28-October 3, at Long Beach, with headquarters at the Hotel Virginia. There will be a discussion of the diagnosis and control of infantile paralysis, rodent plague, community sanitation and other subjects. A trip to Catalina Island has been arranged as an entertainment feature.

Increase in Infantile Paralysis.—The state board of health reports that infantile paralysis is still on the increase and that in June there were seventy-six cases and in July 208, whereas last year there were only four cases reported in June and ten in July. There were fifty cases in the week ending July 18, fifty-seven in the week ending July 25, and fifty-five in the week ending Aug. 1, 1925. In the first six months of this year, there have been 383 cases, while in the same period last year there were forty.

COLORADO

Hospital News.—The Parkview Hospital, Pueblo, is preparing plans for a new building, which will cost $150,000.——A new hospital of sixty beds, costing $40,000, will be erected at the Soldiers' and Sailors' Home, Homelake.

Professors Appointed.—According to *Science*, Dr. Ralph Garfield Mills of Northwestern University Medical School, Chicago, has been appointed professor and head of the department of pathology, and Ivan C. Hall, Ph.D., of the University of California, professor and head of the department of bacteriology at the University of Colorado School of Medicine, Denver.

Medical Arts Building.—It was announced, August 10, that construction of the $3,000,000 Denver Medical Arts Building, to be called the "Tremont Building," will start, September 1. It will be exclusively for physicians and dentists, and be completed by Sept. 1, 1926. There will be twelve stories. The assembly room and library will be on the second floor. The garage in the basement will accommodate 150 cars.

Personal.—Dr. Philip Hillkowitz, Denver, has been elected president of the Jewish Consumptives' Relief Society, and Dr. Charles D. Spivak, Denver, secretary.——Dr. Robert M.

Burlingame, Denver, has been appointed full-time county physician.——Dr. Lloyd H. Ziegler, formerly associated with the Mayo Clinic, has been appointed resident psychiatrist in the Colorado Psychopathic Hospital, Denver, and will assume his duties, September 1.

CONNECTICUT

Another Connecticut Board.—A law enacted this year provides a state board of healing arts of three members, none of whom shall have received a degree from any school teaching any of the healing arts or be an employee of any kind of hospital. A high school graduate who submits satisfactory evidence that he is of good moral character and pays a fee of $5 may appear for written examination in anatomy, physiology, hygiene, pathology and diagnosis before the state board of healing arts, and if he shows a comprehensive knowledge of these subjects, he will receive a certificate permitting him to be examined by the Connecticut Medical Examining Board, or the Connecticut Homeopathic Medical Examining Board, or the Connecticut Eclectic Medical Examining Board, or the Connecticut Board of Osteopathic Registration and Examination, or the Connecticut Board of Chiropractic Examiners, or the Connecticut Board of Naturopathic Examiners. The Connecticut State Board of Healing Arts will act also as a grievance committee to hear complaints against any person practicing any of the healing arts and, after a hearing, will present a statement of the charges against any practitioner to the attorney general who, if it seems advisable, shall bring an action based on the charges in the superior court. The court may then order the license of said person revoked, or take such action as it may deem equitable.

ILLINOIS

Approval of Diagnostic Laboratories.—The state department of health has completed arrangements for issuing certificates of approval to diagnostic laboratories that do work which pertains to public health. To be eligible for a certificate of approval, the laboratory must be personally inspected by an agent of the state department of health and meet certain requirements as to equipment, personnel and character of work undertaken. The inspections for certification will be made only on request, and the certified laboratories will be required to perform tests on specimens furnished by the department from time to time. This undertaking is purely voluntary, there being no law that requires it.

Centennial Celebration.—Under the auspices of the Morgan County Medical Society, a centennial celebration was held at Jacksonville, August 13. There was a picnic luncheon on the Illinois College campus, where a marker was dedicated to the first medical school in the state. Dr. William Allen Pusey, Chicago, formerly President of the American Medical Association, gave an address. A marker was also dedicated on the home site of the first physician in Morgan County, 6 miles west of the city, and a marker was dedicated in honor of the first physician in Jacksonville at the site of his home and office. Dr. George W. Crile, Cleveland, gave an address at the dinner held at the Country Club in the evening.

Personal.—Dr. John C. White, Seatonville, a practitioner for fifty-seven years, has retired to enter the Knights of Pythias' home at Decatur. Dr. White is about 80 years of age.——Dr. George F. Way has resigned as a member of the board of health of Urbana.——Dr. Warner H. Newcomb, health officer of Suffolk, Va., has been appointed health officer of Morgan County and superintendent of the Oak Lawn Sanatorium, to succeed Dr. Thomas A. Mann, resigned. ——Dr. Burt F. Crain, for the last six years on the staff of the Union Hospital, West Frankfort, has resigned, and Dr. James E. Williams, Bourbon, Mo., has been appointed to that position. Dr. John C. Black, on the staff of this hospital, also recently resigned.——Dr. Lee A. Stone, Chicago, lectured under the auspices of the Illinois Medical Society on "Community Defense" at Colusa, August 9.—— Dr. Isaac D. Rawlings has been reappointed director of the state department of health for four years.

KENTUCKY

Personal.—Dr. John C. Morrison, Hickman, has been elected public health officer of Fulton County to succeed Dr. James M. Hubbard, who became the first incumbent of this office seven years ago.——Dr. Ernest V. Edwards, Mayfield, has been commissioned a member of the board of health of Graves County to succeed the late Dr. John L. Dismukes and Dr. John Ray Pryor, Mayfield, elected county health officer to succeed Dr. Dismukes.

LOUISIANA

Educational Car Commissioned.—The specially planned automobile of the Louisiana State Board of Health made its initial trip, August 19. It contains a portable laboratory for the examination of water, milk and products of bottling plants, and for the examination of malaria and hookworm specimens.

Personal.—Dr. Walter F. Henderson, roentgenologist for the Mississippi Baptist Hospital, Jackson, Miss., has been appointed head of the department of radiology, Touro Infirmary, New Orleans, to succeed Dr. Ernest C. Samuel and Dr. Eleazar R. Bowie. Dr. Henderson will assume his new duties September 1.

Child Welfare Clinic.—The child welfare bureau, New Orleans, has established a new clinic at Gentilly on Lavender Street behind the public school, which will provide maternity and infant service. The bureau has thirty nurses constantly at work on child welfare cases and five nurses who do only maternity work under the direction of Dr. C. Jeff Miller. Dr. William W. Butterworth is in charge of the baby service.

MAINE

Two-Day Clinic.—Under the auspices of the Penobscot County Medical Society, the Maine Public Health Association, the state board of health, and the Eastern Maine General Hospital, a clinic was held at that hospital, Bangor, August 18-19. The first day was given to clinical work at the hospital, with discussions by Drs. Channing Frothingham, Daniel F. Jones and Frederick J. Cotton, all of Boston. There was a banquet at the country club that evening. The second day's meeting was at the city hall and, among others, Dr. Clarence F. Kendall, commissioner of health, Dr. Albert W. Fellows and Dr. Carl R. O'Brien, all of Bangor, and Dr. Bertram L. Bryant, secretary of the Maine Medical Association, gave addresses.

MARYLAND

Lectures on Obstetrics.—The lectures to physicians on obstetrics by Dr. James H. Rowland, professor of obstetrics, University of Maryland, and other members of his staff, are being given at the Peninsular General Hospital, Salisbury, and at the Emergency Hospital, Annapolis, on prenatal care; the management of normal labor; postpartum care, and the pathology of pregnancy and labor.

Child Health Conferences.—In the three months ending August 15, child health conferences were held in nearly every section of the state. The number of places visited was ninety-one in twenty counties. More than 2,000 children were physically examined. No medical treatments were given, but children needing treatment were referred by letter to their own physician. About half of the conferences were held in connection with a visit of the Healthmobile, which will spend the remainder of the season on the Eastern Shore holding child health conferences in Queen Anne, Somerset and Wicomico counties.

MASSACHUSETTS

Personal.—Dr. Charles E. Prior has been appointed a member of the board of registration in medicine.——Dr. Frank H. Clough of Medfield has been appointed by the governor associate medical examiner of the seventh Norfolk district.

Harvard Medical Dormitory Assured.—Harvard University announces an additional gift of $575,000 by Harold S. Vanderbilt, '07, to complete the fund for the dormitory of the Harvard Medical School. Mr. Vanderbilt gave $125,000 last April for a gymnasium for the dormitory. The inclusion of the gymnasium in the dormitory is a precedent in medical education, and is part of the general movement for prevention rather than the cure of disease. Nearly 1,500 physicians have subscribed to the fund more than $110,000; about 600 other donors have given more than $200,000, and Harvard University has agreed to contribute about $300,000 as an investment. The campaign for the medical dormitory fund started in September, 1923. The dormitory will be erected opposite the entrance to the medical school at the corner of the Avenue Louis Pasteur and Longwood Avenue. The plans provide for a building for 250 students and leave space for a future addition for 150 students. The raising of the fund has been in charge of a committee of which Dr. Elliott P. Joslin (Harvard M.D., '95) is chairman and Dr. Francis M. Rackemann (Harvard M.D., '12) general secretary.

MICHIGAN

Fitter Families Contest.—A committee of Detroit physicians, under the chairmanship of Dr. George V. A. Brown, will conduct a Fitter Families Contest at the Michigan State Fair, which opens in that city, September 4. The object of the contest is to impress on the public the results of environment, health, education and heredity in the reproduction of the race and the results of scientific care in the selection of parents. A department has been set aside for the exclusive use of physicians, nurses and attendants, and contestants are assured that the entire proceedings will be strictly private. All families whose members are citizens of the state are eligible to enter the contest, but those which show obvious mental or physical defects will be refused entrance. The committee emphasizes that the contest will be a search for health and not for disease. A history of three immediate generations will be taken, a complete physical examination made, and a record of the results presented to the family. There will be no charge for the examinations, and the winning family in each class will be awarded a trophy. Classes will be (1) Large family; man, wife and five or more children. (2) Average family; man, wife and two to four children. (3) Small family; man, wife and one child. (4) Pair; man, wife and no children. The contest as well as certain exhibits to illustrate the mendelian law will be sponsored by the Eugenics Society of United States and endorsed by state and city organizations. This is the first of its kind to be held in Michigan. Such contests have been an annual feature of the Kansas State Fair since 1920, and other Western and Southern states have followed the example.

MINNESOTA

Memorial Tablet.—A bronze tablet in memory of the late Dr. John H. Adair, who was connected with the State School for Dependent and Neglected Children for thirty-four years, has been erected in the lobby of the school's hospital.

Infantile Paralysis.—Twenty-eight of the forty-nine cases of infantile paralysis reported during June and July were in Winona County in southeastern Minnesota, seventeen of which were in Winona City. There had been only two deaths up to July 20.

Personal.—Dr. Homer B. Annis, Minneapolis, has been elected an alumni trustee of Cornell College, Iowa.——Dr. Russell R. Noice has been appointed county physician by the Hennepin County Board of Commissioners to succeed Dr. Hugo J. A. J. Hartig, who was recently killed in an automobile accident.

Convalescent Home for Women.—The former Nurses' Home at 577 Oakland Avenue, St. Paul, is being operated by the Junior League of that city as a convalescent home for women, and the members guarantee its financial support for one year in advance. The Ramsey County Medical Society has endorsed the home.

Society News.—At the fifty-seventh annual meeting of the Wabasha County Medical Society, July 9, Dr. David S. Fleischhauer, Wabasha, was elected president; Dr. Ernest A. French, Plainview, vice president, and Dr. William F. Wilson, Lake City, secretary-treasurer. Among others, Dr. William C. MacCarty of the Mayo Clinic, Rochester, spoke on "Some of the Newer Developments in the Cancer Field."

MISSOURI

Biology Building.—With the gift of $1,000,000 to Washington University by Mr. Charles Rebstock of St. Louis will be erected a building for biology, costing $300,000; the remainder of the gift will be used for general endowment. This is one of the largest gifts the university has ever received from individuals, and differs from the usual donation in that no stipulations are attached.

Medical Society of the Missouri Valley.—The annual meeting of this society will be at St. Joseph, September 30-October 2, under the presidency of Dr. John W. Martin, Des Moines, Iowa. Among the speakers will be Dr. William D. Haggard, Nashville, Tenn., President of the American Medical Association, and Dr. Karl A. Meyer, Chicago, superintendent of the Cook County Hospital. There will be a symposium by members of the faculty of the University of Nebraska Medical College, another by members of the faculty of the University of Kansas School of Medicine, another by the University of Missouri Medical School, and another symposium on "Fractures." There will be diagnostic clinics Wednesday, Thursday and Friday mornings at the Hotel Robidoux. The St. Joseph Clinical Society will hold a two-day session at the various hospitals preceding the meeting. Programs may be obtained by addressing the secretary, Dr. Charles W. Fassett, 115 East Thirty-First Street, Kansas City, Mo.

NEW HAMPSHIRE

Resolutions of State Society.—At the recent annual meeting of the New Hampshire State Medical Society at Manchester, resolutions were passed disapproving the tax under the Harrison Narcotic Law, the tax on traveling expenses necessary in attending medical society meetings and the tax on expenses incurred in postgraduate study. A resolution was passed in favor of periodic medical examinations by the family physician, but disapproving them when performed by so-called "health services." A new position in the society was created—that of news correspondent to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and to the *Boston Medical and Surgical Journal*. It was decided to hold the next meeting at Concord in May, 1926.

NEW JERSEY

Child Lepers at Carville.—Hale and Frank George, 11 and 13 years of age, respectively, who were placed under treatment for leprosy at the Soho Isolation Hospital, Newark, June 15, have been removed to the United States Leper Colony at Carville, La. There is said to be one other child, aged 5, from the Middle West at Carville.

Patrol of Shellfish Area.—Large signs of warning have been placed in conspicuous places in the condemned shellfish areas by the state department of health, whose funds do not permit efficient patrol of these areas. Atlantic City has assigned a policeman to patrol the waters in that vicinity and since January 1 has arrested twenty-six persons, each of whom was fined $25 and costs. There is a recent law making the second offense punishable by imprisonment for thirty days. The state department advises that local health boards in all sections of the state where condemned areas exist should provide a patrol to prevent gathering shellfish.

NEW YORK

Clinical Meeting of County Society.—The Orange County Medical Society held its third monthly clinical meeting in cooperation with the state medical society, July 21, at Port Jervis. Dr. N. B. Van Etten, president of the state medical society, spoke on the service of the state society to local physicians. Dr. Charles H. Smith, clinical professor of diseases of children, College of Physicians and Surgeons, New York, conducted a children's clinic.

Deaths from Excessive Heat.—There were 439 deaths in June in New York, which the state department of health says were attributed directly to the excessive heat which prevailed in the early part of that month; 357 of these were in New York City. There was a rise in mortality in June from heart diseases, most of which, it is said, was probably induced by the hot weather. The heat was also responsible for doubling the number of deaths from infantile diarrhea in New York City as compared with June, 1923. The general record of births and deaths in the state during June was less favorable than in any other June of the last eight years. There were 11,847 deaths, a rate of 13.2 per thousand population, and the excess of births over deaths, 8.6 per thousand population, was the lowest ever reported in the state since registration became practically complete. The volume of sickness, however, as indicated by the cases of reportable diseases, was lower than in the same month for the last five years, the greatest decrease being in measles, scarlet fever, whooping cough and pneumonia. There were more cases of influenza, smallpox and streptococcus sore throat—the outbreak of the latter, centering mainly in Saugerties and surrounding territory, registered 356 cases and four deaths; New York City had eight deaths from this disease.

New York City

Site for Veterans' Hospital.—The decision was made in Washington, August 10, by the Federal Hospitalization Board of the Veterans' Bureau to build the new 1,000-bed neuropsychiatric hospital for veterans on the 550-acre Hodgens estate at Northport on the Sound border of Long Island.

Increase in Diphtheria.—New York *Medical Week* summarizes that part of the annual report of the municipal bureau of preventable diseases for 1924 which pertains to diphtheria, showing that there were 9,687 cases in the city in 1924, as compared with 8,050 in 1923. There was an increase in the number of deaths also from 554 in 1923 to 714 in 1924, an increase of about 30 per cent. The borough

of Brooklyn continues to show a higher morbidity and mortality rate from diphtheria than Manhattan. The borough of Richmond shows the highest death rate—22 per thousand of population.

Sebastiano Sechi.—Following complaints to the county medical society, a detective arrested Sebastiano Sechi, 324 East One Hundred and Sixteenth Street, on a charge of practicing medicine without a license. The detective applied to "the doctor" for treatment for stomach trouble and was told, according to reports, that he was suffering from disturbance of the liver and "a rupture." Sechi, who described himself as an "autopatic," is listed in the New York telephone directory as an M.D. He is said to have represented himself as a physician and charged the detective $3. He is not registered as a physician in the city, nor does his name appear in the American Medical Directory.

Anti-Vaccination League.—A New York City newspaper announced a meeting of "The International Anti-Vaccination League," for August 20, at the Pennsylvania Hotel, Thirty-Third Street and Seventh Avenue, and invited all who oppose "vaccination and serumization" to come and bring their friends. The announcement further stated that the league was recently formed (the name indicates its purpose) and that its officers are "Dr. Benedict Lust, Dr. William S. Hill, Dr. Paul Stratmann, Dr. Hy. Schniring and Dr. Herbert M. Shelton." None of these names are to be found in the American Medical Directory and only that of Lust in the New York City telephone directory. "Dr." Lust, it appears, is a naturopath.

OHIO

Society News.—Dr. George W. Crile, Cleveland, will address the Summit County Medical Society, Akron, September 8, on "Problems Relating to the Liver and Biliary Tract."

Chiropractor Arrested.—W. E. Miner, a chiropractor of Upper Sandusky, was arrested, July 28, it is reported, on a charge of advertising himself as a doctor of chiropractic without having a license from the state medical board.

Lectures in Microscopy.—Professor L. Koeppe of the University of Halle, Germany, recently gave a course of lectures at the Lakeside Hospital, Cleveland, on "Slit-lamp Microscopy." According to the *American Journal of Ophthalmology*, this was the fifteenth course of lectures given by Professor Koeppe in the last year in this country; beginning September 15, he will lecture at the New York Eye and Ear Infirmary, New York.

Health Exhibits at Fairs.—The state department of health has purchased and equipped a truck with health exhibits which will visit fairs, first the Muskingum County Fair, at Zanesville, then the state fair at Columbus, making stops throughout the state per schedule. It will be in charge of the chief of the newly created bureau of health education, Dr. Harry E. Kleinschmidt. Last year the state department of health used borrowed army trucks and presented these exhibits at most of the state fairs.

PENNSYLVANIA

Conference at Cambridge Springs.—Physicians of the northwestern section of Pennsylvania and their wives will meet at Cambridge Springs, September 23. Dr. Carl A. Hamann, dean and professor of applied anatomy and clinical surgery, Western Reserve University School of Medicine, Cleveland, will deliver an address.

"Cathedral of Learning."—The University of Pittsburgh has appointed a building committee which, according to *Science*, is making preliminary surveys on the site for the fifty-two-story "Cathedral of Learning" of the university. It is expected that ground will be broken in October, $7,000,000 of the total of $10,000,000 necessary for the erection of the structure having been raised. The university has just completed a stadium, with a seating capacity of 70,000, at a cost of $2,100,000.

UTAH

State Medical Meeting and Postgraduate Course.—The thirty-first annual meeting of the Utah State Medical Association, and the postgraduate course of the association will be conducted at Salt Lake City, September 7-12. All meetings, clinics and courses will be held at the University of Utah. The council will meet Monday and daily thereafter, and the house of delegates at noon and 5 p. m. Monday and at noon September 8 at Stewart Hall. A caravan of automobiles will leave Salt Lake City Saturday preceding the meeting for Pocatello to bring guest speakers from the Idaho meeting to Salt Lake City. Those who will share in this trip should notify the president, Dr. Sol G. Kahn. The annual banquet will be Tuesday evening at the Hotel Utah, when the president will deliver his address. Among the speakers at this session will be Drs. Walter C. Alvarez, associate professor of research medicine, University of California Medical School; Joseph C. Beck, professor of otology, rhinology and laryngology, University of Illinois College of Medicine; William F. Braasch, professor of urology, University of Minnesota Post-Graduate School of Medicine, Mayo Clinic; Russell D. Carman, professor of roentgenology, University of Minnesota Post-Graduate School of Medicine, Mayo Clinic; George B. Eusterman, associate professor of medicine, University of Minnesota Post-Graduate School of Medicine, Mayo Clinic; Alexius M. Forster, chief of staff, Cragmor Sanitarium for Tuberculosis, Colorado Springs; Carl A. Hamann, dean and professor of applied anatomy and clinical surgery, Western Reserve University School of Medicine; Julius H. Hess, professor of pediatrics, University of Illinois College of Medicine; Edward Jackson, emeritus professor of ophthalmology, University of Colorado School of Medicine; Frank W. Lynch, professor of obstetrics and gynecology, University of California Medical School; John L. Porter, professor of orthopedic surgery, Northwestern University Medical School; Ernest Sachs, professor of clinical neurologic surgery, Washington University Medical School, and Wallace I. Terry, professor of surgery, University of California Medical School.

WASHINGTON

Dr. Barnhart Resigns.—Dr. Thomas C. Barnhart, Spokane, for ten years chief county physician and health officer, tendered his resignation, August 10, effective September 1. Dr. Barnhart will engage in private practice.

Personal.—Dr. and Mrs. Frank P. Klahr, Walla Walla, recently celebrated their golden wedding anniversary.——Dr. Henry Storgaard, Yakima, has been appointed county physician, to succeed the late Dr. Charles C. McCown.——Dr. Edward L. Brinson of Bellingham has been reappointed for two years health officer of Whatcom County.——The governor has reappointed Dr. James W. Doughty superintendent of the Northern State Hospital at Sedro-Woolley.

CANADA

Montreal Loans Building.—A contract has been made between the city of Montreal and the University of Montreal whereby the city gives the university the use of the Maisonneuve city hall temporarily for a radium institute to be used as a hospital for the treatment of patients. Indigent patients sent there by the city will be treated free. When the new Incurables' Institution at Cartierville is completed, the radium institute will take up its quarters there.

Antituberculosis Work in Canada.—Sanatoriums for the treatment of tuberculosis have been established in every province of Canada with the exception of Prince Edward Island. The *Canadian Medical Association Journal* says that about $12,000,000 has been spent in the construction of these institutions, all of which are under the supervision of the provincial governments and are financially assisted by them. These sanatoriums provide facilities for the treatment of more than 5,000 patients, representing 635 beds per thousand deaths occurring annually from tuberculosis. The tuberculosis death rate in Canada dropped from 180 per hundred thousand in 1901 to 84.7 in 1924. This, it is said, is the lowest rate on this continent or in continental Europe. In furthering this campaign, the dominion government, the provincial governments and many municipal governments, the medical profession, the Red Cross and the Anti-Tuberculosis Association of Canada have all been active. At the same time, attention is being paid to tuberculosis in cattle. More than $2,000,000 is spent annually in the inspection of herds and the removal of animals seriously affected.

PHILIPPINE ISLANDS

Manila Free from Smallpox.—The report of the Philippine Health Service for 1923, which has just been received, shows that the city of Manila has been free from smallpox since 1921, and that no deaths from cholera occurred in Manila in 1923. In all, 2,132,653 persons were vaccinated against smallpox in the islands in that year, and an immunization campaign was conducted in which about 103,000 persons received the first injection of anticholera vaccine, more than 80,000 persons the first injection of antityphoid vaccine, and almost

350,000 persons the first injection of a mixed typhoid-cholera vaccine. The mortality rate from smallpox in the islands was almost negligible, 0.004 per 10,000 of population, as against an average of 14.30 for the last five years. Tuberculosis caused the largest number of deaths in the general mortality. There was an outbreak of typhoid in Manila in 1923, there being 1,057 cases and 270 death among permanent residents. Of these, 272 cases were in students, 236 in food handlers, 223 in laborers, and 117 in merchants and professional men. There was an epidemic of dysentery in the province of Leyte, which up to September, 1923, had caused 616 deaths, representing an annual death rate of 15.53, whereas in the five years ending with 1923 the average mortality rate for this disease was 5.29 per 10,000 of population. Of the forty-six towns in the province, thirty-six were infected with dysentery. The general mortality rate for the islands for 1923 was 18.34 per thousand of population, as against 18.91 for 1922 and an average for the last five years of 25.17. The infant mortality rate was decreased also, being 147.64 for each thousand births, as against 154.94 in 1922.

GENERAL

Assistance for Wounded in Morocco.—The American Red Cross has presented $10,000 to the French Red Cross, according to the *British Medical Journal*, for the assistance of the wounded in Morocco.

Society News.—The thirty-fifth annual meeting of the New York and New England Association of Railway Surgeons will be at the Hotel Commodore, New York, November 5-6, the meetings to be on the first day and clinics in New York hospitals on the second day.

Weekly Health Index.—The census mortality reports published by the Department of Commerce for the week ending August 15 indicate a mortality rate of 11.3, as against 10.3 for the corresponding week last year. The highest rate (22.2) was for Nashville, Tenn., and the lowest (2.6) for Somerville, Mass. The highest infant mortality rate (191) was for Richmond, Va., and the lowest for Des Moines, Iowa, which reported no infant mortality. The annual rate for sixty-four cities for the thirty-three weeks of 1925 is 13.3, against a rate of 13.0 for the corresponding period last year.

International Safety Contest.—Herbert Hoover, Secretary of Commerce, has invited the governors of twenty-eight mining states to send a state official to the Fourth International First Aid and Mine Rescue Contest, to be held at Springfield, Ill., September 10-12, under the auspices of the Bureau of Mines. These annual contests are open to all miners, quarry men, metallurgical workers, and those in the petroleum and natural gas industries. They are held in cooperation with the Red Cross, the National Safety Council, and various miners' organizations. Among others, the Congressional Medal will be awarded. The Bureau of Mines has trained in mine-rescue methods about 140,000 miners. This contest aims to further the general campaign for safer conditions in mines.

Interstate Post Graduate Assembly.—The general headquarters for the Interstate Post Graduate Assembly of America, which meets in St. Paul, October 12-16, will be the St. Paul Auditorium. Among the distinguished foreign speakers on the program will be Lord Dawson of Penn, London, England, personal physician to the king; Sir William Arbuthnot Lane of London; William Blair Bell, professor of obstetrics and gynecology, University of Liverpool, England; Professor Vittorio Putti, Bologna, Italy; Dr. Henry L. McKisack, Royal Victoria Hospital, Belfast, Ireland, and Dr. W. H. Parkes, Auckland, New Zealand. There will be diagnostic clinics and discussions by prominent physicians in this country and Canada, and at the banquet there will be addresses by distinguished citizens from this and other lands. The hotel headquarters will be at the St. Paul Hotel.

American Public Health Association.—The fifty-fourth annual meeting of this association will be in St. Louis, October 19-22, with the Hotel Statler as headquarters. There will be a greater number of joint sessions and general sessions than usual; two and sometimes four sections will combine in a number of instances to discuss some development of common interest. A subject to be discussed from various angles is the "Epidemiology of Respiratory Diseases"; another is "Oyster Pollution." There will be five general sessions and twenty-seven meetings in all; more than 125 papers and reports have been scheduled. There will be a special session on mental hygiene, arranged by the National Committee on Mental Hygiene. The local committee has provided a program of entertainment; ladies are especially invited; members and their families will receive a 25 per cent. reduction in railway fare. Additional information will be furnished by the secretary, 370 Seventh Avenue, New York City.

American Roentgen-Ray Society.—The twenty-first annual meeting of the American Roentgen-Ray Society will be at the Mayflower Hotel, Washington, D. C., September 22-25. Dr. Aldred S. Warthin, Ann Arbor, Mich., among others, will discuss "The Pathology of Gallbladder Disease"; Dr. Henry K. Pancoast, Philadelphia, "Pneumonoconiosis"; Dr. Edward H. Skinner, Kansas City, Mo., "The Roentgen-Ray Interpretation of Cerebral Abscess"; Dr. Leon T. LeWald, New York City, "Pathological Fractures—Nature and Variety"; Dr. James T. Case and Dr. W. N. Boldyreff, Battle Creek, Mich., "Effects of Radiation on Gastric Secretion," and Drs. Robert H. Lafferty and Clyde C. Phillips, Charlotte, N. C., "Preliminary Report on the Use of Corpus Luteum Extract to Prevent Nausea in Radiation Therapy of Uterine Conditions." Dr. James Ewing, New York City, will give the Caldwell lecture on "Tissue Reactions to Radiation." A. B. Crane, D.D.S., and L. M. Christie, D.D.S., will conduct a dental diagnostic clinic during the meeting. The scientific exhibit will be under the direction of Dr. Edwin A. Merritt, 1909 Massachusetts Avenue, N.W., Washington, D. C.

Annual Safety Congress.—The fourteenth annual Safety Congress will be at Cleveland, September 28-October 2, during which period the National Civilian Rehabilitation Conference and the Conference of the Industrial Nursing Section of the National Organization for Public Health Nursing will also be in session. Registration will be at the Statler, Winton and Cleveland hotels. There will be a visit to the Nela Park plant of the National Lamp Works, where a dinner will be given to delegates at 6 p. m., September 29. Among many others, Dr. F. Ritzmann of the International Labor Office, League of Nations, Geneva, Switzerland, will speak on "Accident Prevention Activities of the International Labor Office"; Dr. Frederick G. Barr, National Cash Register Company, Dayton, Ohio, on "Syphilis as a Factor in Industrial Surgery"; Dr. Paul B. Magnuson, Chicago, on "The Industrial Surgeon as a Compensation Witness," and Dr. Charles P. Hutchins, Aetna Life Insurance Company, Syracuse, N. Y., on "The Malingerer." There will be an exhibition of motion pictures on safety Tuesday afternoon at the Statler Hotel, a general round table Wednesday afternoon, and the annual banquet Wednesday evening.

FOREIGN

Honorary Degrees Conferred.—A special congregation of the University of Bristol was held in the Great Hall, July 23, to confer the honorary degree of LL.D. on Sir Humphry D. Rolleston, president of the Royal College of Physicians of London, and on Sir Berkeley G. A. Moynihan, professor of clinical surgery, University of Leeds.

Fund for Bacteriology and Biochemistry.—The King Edward the Seventh College of Medicine, Singapore, has been given $350,000 by the Rockefeller Foundation to endow chairs of bacteriology and biochemistry, on condition that the government establishes an extra chair of biology and agrees to equip and maintain the three departments.

Bibliography of Chaulmoogra Oil.—The July issue of the *China Medical Journal* is devoted largely to the subject of leprosy, and, among contributors of articles are Dr. E. Muir, Calcutta, and Dr. Victor G. Heiser of the International Health Board. There are contributions by members of the faculty of the Peking Union Medical College, and one of them is an extensive bibliography on chaulmoogra oil.

Irish Free State to Establish Medical Register.—A cable dispatch notes the announcement of the intention of the Irish Free State to establish an independent medical register separate from that of the British General Medical Council by which the medical faculty of Ireland has been controlled heretofore. The decision of the government is to become effective next February, but must be ratified by the Irish parliament. The medical profession of Ireland is said to oppose the proposal.

Potrait of Sir John Macalister.—To commemorate the thirty-eight years of service of Sir John Macalister as secretary of the Royal Society of Medicine, the council has opened a fund for a memorial, to take the form of a portrait or bust, to be placed in the society's house. Subscriptions should be sent to the treasurer, Royal Society of Medicine, 1 Wimpole Street, London, W. 1. Persons outside the society who appreciate the work of Sir John Macalister in amalgamating eighteen medical societies into one corporate body are also invited to contribute.

Appointments at Sydney University.—Prof. J. C. Windeyer has been chosen as the first occupant of the chair of obstetrics at Sydney University, Sydney, Australia. Dr. Reginald Davies has been appointed lecturer in gynecology. Dr. W. C. Mansfield succeeds Dr. Herbert Marks as lecturer in diseases of the ear, nose and throat. Dr. T. M. Greenaway has been appointed president of the University Medical Society for 1925. Dr. William C. Smith, who has just completed his undergraduate work, won the class honors and the university medal.

Stomatological Association.—The International Stomatological Association gave a program in London, July 27, at the Medical Society of London, in order to obtain information about the status of stomatology in the British Isles, which will be presented at the next International Stomatological Congress, which will meet in 1927. Among others who spoke was Alfred J. Asgis, D.D.S., New York, and the following societies were represented: British Dental Association, the Section on Odontology of the Royal Society of Medicine, the Public Dental Service Association, and the British Stomatological Committee.

English-Speaking Ophthalmologists' Convention.—About 700 persons registered at the convention of English-speaking ophthalmological societies in London in July from France, Holland, Switzerland, Austria, China and all parts of the British Empire; the United States was represented by about 230 delegates. The president and council of the Royal College of Surgeons of England gave a reception, Sir John and Lady Bland-Sutton receiving the guests. The official banquet which terminated the convention was held in Guild Hall, July 17, with the Duke of Connaught the guest of honor. One of the primary aims of the meeting was to reestablish international congresses of ophthalmology on a prewar footing.

History of Smallpox in Australia.—The minister of health of Australia is publishing a history of smallpox in that country for the period 1909-1923; a previous publication brought the history of smallpox in Australia up to 1909, in which year federal quarantine was established. Australia had outbreaks of smallpox in 1881 after a quiescent period of thirteen years and in 1884. There had been outbreaks in Melbourne in 1857 and 1868 and in Sydney in 1877. During the fifteen-year period covered by the present volume, there were 2,400 cases of smallpox, with four deaths, in New South Wales. There were nine cases of smallpox in Victoria in 1921. During the whole period under review there was no case of smallpox in Tasmania, and only one in South Australia.

British Association and Medical Defense.—The most notable debate by the Representative Body of the British Medical Association at the recent annual meeting at Bath, was on the question of the formation of a medical defense association. Dr. Morton Mackenzie, chairman of the organization committee, led the debate on the affirmative side urging that the association ought to be able to defend its new members from the outset of their professional careers. He stated that less than 7,000 members willing to pay an annual fee of one pound would make the undertaking financially secure. This question has been before the representative body on previous occasions. The council, however, sought a new vote on the matter on account of a growing feeling that members should be protected. Every opposing argument could be met until an amendment was introduced, as a matter of record, that medical defense was being dealt with already in a satisfactory manner by various existing organizations which had large memberships and large reserve funds. The strongest argument of the opposition, says the *Lancet*, was that of Drs. Peter MacDonald and Edward B. Turner, who pointed out "the extremely awkward situation" in which the British Medical Association would find itself in defending a practitioner where the conduct which had to be defended might appear ethically indefensible.

Deaths in Other Countries

Dr. **G. Bär,** Zurich, succumbed to the effects of roentgenray injuries, first noted in 1906, aged 60.——Dr. **Alexander J. M. Blaney,** Dublin, Ireland, recently.——Dr. **K. Schlösser,** professor of ophthalmology, Munich, aged 68. He is said to have introduced the alcohol injection treatment of trigeminal neuralgia.——Dr. **Thomalla,** Berlin. He was stricken with cerebral hemorrhage at the second representation of a play of which he was the author.——Dr. **H. Hopstock,** prosector at Oslo and author of historical works on anatomy, aged 59.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 15, 1925.

The Plea of "Irresistible Impulse" in a Murder Case

In the court of criminal appeal, the plea of "irresistible impulse" in a murder case has failed. The prisoner was an unmarried man who had been convicted of the murder, by strangling, of a barmaid with whom he had been intimate. Last March the girl told her employer that he had tried to throttle her, and on another occasion her mouth was seen to be bleeding and she had a scar on her neck. May 7, they had some drinks at two saloons, and early on the following morning the prisoner arrived home and told his family that he had murdered the girl. Later he took the police to the place where her body was lying in some bushes, and said that he had had connection with her and that she had asked him to "do her in." The judge summed up the case to the jury on the question whether its members were satisfied that the prisoner had committed wilful murder or whether it was proved that he was insane at the time of the crime. In giving judgment in the court of criminal appeal, the lord chief justice said that the judge had not misdirected the jury on the question of motive; there was no evidence on which the defense of manslaughter could have been founded. It had been argued that though the prisoner might have known what he was doing and that what he was doing was wrong, he came within a benevolent interpretation of the law if the jury thought that he throttled the girl as the result of an impulse that owed its origin to cruelty and lust. The combination of cruelty and lust was precisely the kind of thing with which the criminal law had to deal, and it was idle to say that a man was innocent because he suffered from such a combination.

International Prison Congress

The ninth international prison congress has been held in London at the Imperial Institute, South Kensington. The home secretary, Sir William Joynson-Hicks, who was elected honorary president, said he regarded the congress as of especial importance since more countries than ever before were represented. The first congress was held in London in 1872, and the exchange of views and stimulus of thought resulting from their meetings has had a noteworthy effect on the criminal laws and prison administration of all countries. The time had passed when executive governments conceived that they had done their duty to society when they had arrested offenders and placed them in safe custody. In arresting a man and depriving him of his liberty the executive government undertook the treatment and training of the offender. A man did not lose his rights as a human being because he had broken the law, and the state would not have done its duty if he came out of prison in such a condition of mind and body that he was unfit to take his place as a citizen again. The state was free to experiment on prisoners with mental, moral and physical forces, with a view to their restoration to a state of normal citizenship, and that was the present object of prison administrators. In the last few years there had been in this country a striking diminution in the number of persons in prison, notwithstanding that there had been an increase of population in the same period. Fifty years ago there were 20,000 people in local prisons; today there are only 8,000. Fifty years ago there were 10,000 people in penal servitude; today there are 1,600. The reasons for that decrease are better education, improved sobriety, and improvement of the standard and condition of living, and also in the care taken

by judges to make the greatest possible use of the alternatives to detention. Laws excluding children from prison and providing for the treatment of mental defectives in special institutions had contributed to the reduction, and so also had the provision of training in Borstal institutions for offenders between the ages of 16 and 21, for the majority on release became law-abiding citizens.

TWO EXPERIMENTS IN PROGRESS

The international administration of our prisons had been transformed. A new classification prevented the contamination of young offenders by hardened criminals. In addition to separating young persons of from 16 to 21, we were now separating young men of from 21 to 25 from the older men. Two interesting experiments were being carried on. Separate confinement had been almost entirely abolished. Prisoners worked an eight hour day in well ventilated shops. Until 1922 there had been only elementary instruction for young persons and illiterate; the general body of adult prisoners received no education. There was now a large scheme of adult education on a voluntary basis, a rather remarkable change in prison life. Prison libraries had been improved out of all knowledge in the last fifty years. The general effect of the changed conditions was to substitute for the old system of stern repression and personal degradation a new system of strenuous, hard training and education, in which the cooperation of the prisoner was secured as soon as possible.

The following resolutions were adopted by the congress: Judicial studies should be supplemented by criminologic studies, magistrates before appointment being required to attend lectures on psychology, sociology, forensic psychiatry, and penology. A judge before sentencing should possess, by means of inquiries made by the police, "a full knowledge of the physical and psychic conditions and the social life of the accused and the motives of the crimes." As the prevention of contamination is one of the first essentials in prison treatment, prisoners should be classified according to character and ability to be reformed, and, when possible, prisoners of different classes should be confined in different buildings. Pecuniary payments should be made to prisoners for work done by them, such payments being utilized "for the purpose of repaying the liabilities of the prisoner, both to the state and to his victims, after reasonable provision has been made for the prisoner's wife and family." Abnormal adults showing dangerous tendencies should be sent to nonpenal institutions or colonies, and if such persons are conditionally discharged effective after-care and close supervision are necessary measures.

Spahlinger's Treatment of Tuberculosis

Mr. Spahlinger has not been successful in his quest for financial support in this country for the production of his serum, in spite of the favorable report of the medical members of parliament who recently visited his laboratory at Carouse. Both his home and his laboratory are threatened by a bill of sale, which falls due at the end of September. In these circumstances Mr. Spahlinger, who hopes that in the meantime he may receive sufficient support to obviate this disaster, has agreed to the request of the Bovine Tuberculosis Committee at Crewe to test his serum for inoculating cattle against tuberculosis. Similar tests are stated to have already been carried out at Geneva with good results, and should the tuberculosis committee at Crewe, which consists of veterinary surgeons, be convinced of the value of the serum for cattle, Mr. Spahlinger would be prepared to enter into an arrangement which would give him the necessary sum for carrying on his work for human beings. Mr. Spahlinger is offering his serum for cattle first of all to this country in gratitude for the support he has received from the British public. He asserts that if his treatment for cattle were generally adopted in this country it would greatly increase the value of British dairy products, and many thousands of people, especially children, who get infected milk or other dairy products would escape tuberculosis.

An Institute for Otology

The Middlesex Hospital Medical School has received a gift of $100,000 from Mr. Thomas Robinson Ferens of Hull, for the foundation of an institute of otology, to be devoted to research into the structure, functions and diseases of the ear, nose and throat. When the Ferens Institute opens, early next year, postgraduate students from America and the dominions will be able to complete their studies in London, and English students will no longer find it essential to take a course on the continent. The institute will occupy at first a portion of the top floor of newly reconditioned buildings, to which patients will be removed during the rebuilding of the Middlesex Hospital. Here it is intended to establish a laboratory, museum and library, entirely devoted to research in diseases of the ear, nose and throat. Graduates in medicine who intend to become specialists in otology will attend for further study and research, and it is hoped in time to strengthen the institute by the establishment of scholarships; but, for these, further endowments will be required. This gift to the Middlesex Hospital Medical School is one of the series of gifts by Mr. T. R. Ferens to the cause of education. Identified throughout his business and public career with Hull, he has lately set aside $1,250,000 for the building of a university college in that city.

BELGIUM

(From Our Regular Correspondent)

Aug. 4, 1925.

Brussels Medical Conference

The Brussels medical conference, or the Journées médicales so called, is meeting with increasing success every year. It synthesizes national medical activities. In addition to the national representation, many foreign scientists take part in the convention. The collaboration of French scientists constitutes a strong link between French and Belgian physicians. The Journées médicales have been developed to organize for physicians located at some distance from the medical centers a practical general review, in the form of a few days spent in the hospitals, of the progress of medicine during the current year. In this connection, the collaboration of the four Belgian universities has been a powerful aid.

The opening meeting, which was attended by the queen, took on a ceremonial character, which was partly due to the fact that it was held in the Palais des Académies. Many foreign delegates were present: Drs. Vincent (France), Bandelac de Pariente (Spain), Kashiwado (Japan), Zota (Roumania), Ernst (Switzerland), Prüm (Luxembourg) and Abadie (Algeria). M. Brachet, in the opening address, defined the rôle of medicine and anticipated what might be expected in the future.

Dr. Maurice de Fleury, member of the Academy of Medicine of Paris, opened the medical convention proper with an address on psychiatry in relation to psychology. He pointed out that in the vast domain of psychoses two large groups must be distinguished: first, psychoses provoked by lesions of the nerve centers, which are well defined psychoses of a chaotic character and which may end in dementia; secondly, mental affections lacking any anatomic substratum, which result from a constitutional hereditary predisposition, which gives the affection a peculiar stamp and allows of its classification. The speaker discussed more particularly the second group, the profound study of which has been the work of the

French school and has led to a classification at once simple and rational. The second group of psychoses comprises five varieties of well defined affections: (1) the cyclothymic psychosis characterized by an alteration of the patient's activities; (2) the emotive psychosis determined by disorders of the emotions; (3) the perverse psychosis characterized by a lack of kindliness; (4) the mythomaniac psychosis associated with a perversion of the social instinct, and (5) paranoia, which is marked by arrogance and self-love.

We can mention more in detail only a few of the principal topics discussed:

THE TRANSMISSION OF HUMORS

Dr. Demoor of Brussels explained the significance of the humors in physiology and pathology. Besides the nervous system, whose regulatory power over the tissues was first reviewed, there is a supplementary humoral mechanism. The substances that play a part in humoral regulation do not have a specific action, for, if the properties of the environment are modified, very different effects are secured as the result of the same humoral or nervous excitation. The author recounted the results of a large number of experiments with epinephrin, on the heart and on uterine anaphylaxis, illustrating the prodigious rôle that humors play in all vital phenomena.

THE HEALTH OF THE STOMATOLOGIST

M. Lebrun discussed the pathology of the dentist, who, like many other medical specialists, is exposed to many influences affecting his health which are due to professional factors. Lebrun considered the various affections, dwelling particularly on those that are due to standing long in the same position—digestive troubles and postural troubles, especially metatarsalgia.

TREATMENT OF BACTERIAL INFECTIONS

Sir Almroth Edward Wright took up (in French) the treatment of bacterial infections. He gave an account of antityphoid vaccination and the trials of therapeutic vaccination. The determination of the opsonic index is very useful. It is owing to this method that the complete failure of all forms of vaccinotherapy in tuberculosis has been established. He emphasized, however, the good results he had secured in certain forms of staphylococcemia by immunotransfusion.

SEROTHERAPY IN GAS GANGRENE

Dr. Vincent, medical inspector general, reported the results secured by the use of polyvalent antigangrene serum. The results obtained in war wounds have established that the number of cases presenting gas gangrene may be reduced 80 per cent. All lesions adjacent to the digestive tract may be complicated by gangrene. In parabuccal abscesses, Ludwig's angina, pulmonary and pleural gangrene, perirectal abscesses, diabetic gangrene, and many other affections, but especially gangrenous appendicitis, serotherapy to prevent gas gangrene may be indicated.

VERTEBRAL RHEUMATISM

Dr. Leri described the pathologic anatomy and the very characteristic symptomatology of vertebral rheumatism, which must not be confused with rhizomelic spondylitis, which is usually of gonorrheal origin. The treatment for rhizomelic spondylitis, during the period of evolution, is, etiologically, the treatment of gonorrhea, and, secondarily, from the orthopedic standpoint, maintenance of the patient in a correct position. Once the ankylosis is established, the author does not believe in the efficacy of surgical treatment. Resections of the hip have accomplished nothing. The creation of subtrochanteric nearthrosis is being tried. As for vertebral rheumatism, a special diet and heat applications (more especially in the form of diathermy) are indicated; also irradiations, and, in certain rebellious cases, the surgical removal of an osteophyte impinging on a nerve root.

THE ANTIDIPHTHERIA CAMPAIGN

In connection with the various aspects of the antidiphtheria campaign and antidiphtheritic treatment, Dr. Vernieuwe made a comparison of American and European serums. In his opinion, the former are more rational; first, because of their greater concentration (they contain less of different albumins and thus diminish the dangers of anaphylaxis), and, secondly, because of the nature of the antiseptic that they contain. School physicians, in view of prophylaxis, often refer to the policlinic children who are said to be diphtheria carriers. Physicians should be very circumspect about declaring that a child is a germ carrier and should be fully assured that the organisms concerned are the Loeffler bacillus and not pseudodiphtheritic. Children are in excellent health, as a rule, and actual carriers of diphtheria bacilli are rare. In the majority of cases, when an epidemic of diphtheria persists in a school, it is because a child is affected with diphtheritic rhinitis. The Schick test will often aid in detecting diphtheria carriers. The injection of serum is the best prophylactic treatment for persons exposed to diphtheria. The active immunity secured by the injection of a toxin-antitoxin mixture is very satisfactory. This form of vaccination is harmless and should become more general.

TUMORS AND DISEASES AFFECTING THE CHROMATIN

Dr. Dustin of Brussels expounded his ideas of cancer, which he holds to be a disease of the cell-nucleus and the chromatin. The cancer problem is a problem of the nucleus and many cancerogenic substances that provoke a diseased condition of the chromatin. Dustin brought out that pyknotic destruction is in reality an excitation to karyokinesis and that the pyknotic wave is followed by a kinetic wave. This throws light on the cancerogenic rôle that certain substances may play which provoke nuclear pyknosis. We are thus compelled to take account of the multiplicity of agents that may provoke cancer and of the difficulties that the problem of the origin of cancer imposes.

THE REMOTE RESULTS OF THE WILLEMS METHOD

The method of immediate active mobilization recommended by Professor Willems in traumatic arthritis is well known. It has sometimes been objected that excellent primary results are followed by unsatisfactory functioning of the joints. To meet this objection, Professor Willems has reinvestigated all the cases observed by him during the past seven or eight years, following which he affirms: 1. The maintenance of an excellent condition of the musculature of the affected member; the musculature is, in the great majority of cases, practically equal to that of the healthy member. 2. The almost constant presence of osteophytes on the epiphyses of the traumatized joints, and constant on the epiphyses of the joints that are the seat of a suppuration. Strangely peculiar is the fact that these osteophytes are never turned toward the joint but extend toward the epiphysis and do not impair the movements of the joints. 3. The persistence of perfect mobility and the absence of any serious pain in the patients, who experience only slight rheumatoid pains in connection with changes of the weather or periods of inaction. It is a peculiar fact that, whenever one of these patients has changed his occupation, he has chosen a calling requiring even greater activity of the traumatized joint than his previous work.

Numerous fêtes and receptions were interspersed with the scientific meetings. The convention, or Journées médicales, was terminated by an excursion to Bruges, where a number of lectures on medical art were given. Bruges is known for

its excellent museum and its remarkable St. Jean Hospital. A medicosurgical exhibit and a medical studio added to the interest of the conference. Paintings, drawings and aquarelles—all the work of physicians—presented a beautiful play of colors. Dr. Lambotte, the originator of osteosynthesis, furnished a surprise by his exhibit of some marvelously fine violins. Physicians often seek some means of forgetting, for the time being, their profession. This second exhibit of objets d'art gave abundant evidence of their ability to excel in the fine arts.

NETHERLANDS

(From Our Regular Correspondent)

Aug. 5, 1925.

Health Insurance for the Middle Classes

The committee appointed by the Nederlandsche Maatschappij tot Bevordering der Geneeskunst discussed, at a recent meeting, the possible ways of creating a health insurance society for the benefit of the middle classes. Important statistical information has been secured; tentative plans and provisional budgets have been drawn up, and inquiries in regard to similar institutions in foreign countries have been conducted. As a result of its investigations, the committee has recommended that the Nederlandsche Mattschappij tot Bevordering der Geneeskunst collaborate in the creation of such an institution. The good relations that exist in other health insurance societies between medical superintendents or inspectors and medical practitioners favor the development of a new health insurance society for the middle classes.

The Antiplague Crusade in Java

Since the beginning of 1924, the antiplague services in Java have become self-governing, being now served by sixteen health officers. In some regions the case incidence has diminished rapidly. In other sections, notably Bojolali, Magelang and Temangung, there has been some recrudescence. The vaccinations that have been tried on several previous occasions have been discontinued, as the results were of doubtful value. On the other hand, every effort has been made to improve the housing conditions. During the year 1923 more than 50,000 houses were put in better condition, while the deratization crews succeeded in capturing more than 130,000 animals. In spite of these preventive measures, more than 8,500 new cases of plague developed during 1923.

A Study on Goiter

A comprehensive study on the characteristics of goiter in the Netherlands has been published by De Jong. It is a remarkable fact that goiter does not develop in the lowlands in the same manner that it does in the mountainous regions. In the latter, the thyroid body has a large development in the new-born, whereas congenital goiter is rare in the plain country. Likewise, in the lowlands few cases of goiter are observed in school children, whereas in Switzerland, beginning with school age, hypertrophy of the thyroid gland is quite general. Great differences are observed also in the clinical types; for example, there is little cretinism in the low countries, and exophthalmic goiter often presents an incomplete syndrome. From the anatomic standpoint, lesions with large colloidal cysts are observed. It seems that, geographically, more goiters are noted along the banks of bodies of water than elsewhere.

Medical Statistics

According to the medical yearbook (Geneeskundig Jaarboekje), the number of physicians in the Netherlands increased from 3,646 in 1923 to 3,855 in 1924. There was a corresponding increase of students—from 2,018 to 2,120, of whom 195 were women. The medical school having the largest number of students was that of the University of Leyden (625).

Municipal Control of the Sale of Milk in Amsterdam

In several previous letters I have referred to plans for the sale of milk in Amsterdam. A committee appointed by the municipal council of Amsterdam has recently published a report on the question, and proposes the municipalization of the purchase and treatment of milk, distribution to be left to private trade, subject to certain conditions as to the selling price and other matters. The monopoly in the purchase and treatment of the milk supply would be effected through a central organization having a director and assisted by a council, composed, among others, of producers and consumers. The purchase at a price varying with the changing value of the product would be made, preferably from the farmers' organizations in the immediate vicinity of Amsterdam, and, secondarily, would be procured from the farms in the provinces of North and South Holland, and, eventually, Friesland. The milk thus procured would be sent first to seven receiving stations located in the several provinces (but controlled by the central organization), where it would be purified and refrigerated, and, in certain instances, subjected to pasteurization. All the milk that the wholesale dealers in the city receive direct or through the mediation of the seven receiving stations would be subjected to pasteurization in the city and would be sold to large consumers, in milk cans, or would be put up in bottles for the retail trade, retail merchants being compelled to call at the central stations for their daily supply. It is expected that in this manner a most excellent quality of milk will be furnished, since the milk will be pasteurized at 63 C. (145 F.) in the vessels in which it is to be delivered. That is why the centralization of the pasteurizing operation in the wholesale establishments in Amsterdam seemed indispensable. Double pasteurization was considered but was not approved in view of the deteriorating effect on the vitamins. It was thought that cooling the milk to 8 C. (46 F.) at the receiving stations in the provinces would usually suffice to prevent the growth of bacteria until it reached the stations in Amsterdam, where it was to be pasteurized. However, this proposition has not been accepted without protest. It is urged that in some instances thirty-six hours would thus elapse before the milk would be pasteurized. The committee authorized, therefore, that, in case of hot weather or unduly long distances, milk might, by way of exception, be pasteurized before it was forwarded to the city. Many further objections have been raised to the proposed plan; more particularly, that the price of milk would be inevitably increased as the result of such a system of organization. It is held that the equipment of pasteurization plants, receiving stations in the provinces and distributing stations in the city, together with indemnities that would have to be paid, would represent a capital of eighteen million florins, or approximately seven million dollars.

Instruction in Public Health

The public health council appointed, some time ago, a commission to study into the question of instruction in public health. The minister of public health, also, took an interest in the question, and a plan has been proposed for the organization of such instruction and for the establishment of the conditions for securing the degree of doctor of public health.

The Enforced Abandonment of Medical Practice

A plan which interests the whole medical profession and which breaks with ancient traditions universally accepted was proposed some time ago at a medical convention. It came up again recently in the discussion on the organization of a council on medical ethics, which I have already mentioned in previous letters. It is the question of the involuntary

abandonment of a medical practice. It is proposed that if a medical tribunal shall decide that a practitioner because of physical or mental incapacities is unable to continue the practice of medicine, such a practitioner shall be entitled to a pension or annuity payable by the state. Voluntary abandonment of a practice would not, of course, entitle a physician to an annuity. Only in special and carefully investigated cases would such a right obtain. In any event, the idea of pensioning a physician declared incapacitated and unable to continue his professional practice deserves to be mentioned. It is apparently the first time in history that a state has shown an interest in the future of members of a liberal and independent profession who become incapacitated.

Accidents from Neo-Arsphenamin

Following numerous accidents observed in Javanese, resulting from the injection of neo-arsphenamin, Dr. Kuyer has published *(Tijdschr. v. Ned.-Indie)* a study on the special sensitiveness of Javanese to this drug. The therapeutic arsenical had been administered mainly in cases of tertiary frambesia. During 1922, Kuyer observed in 118 patients five cases of dermatitis due to the remedy. In one case there was a fatal outcome. The number of injections received by these five patients had averaged three and one-half, with 1.7 gm. of neo-arsphenamin. In 1923, he reduced the dose per injection to from 0.3 to 0.4 gm., or, by way of exception, 0.6 gm. The course of treatment did not exceed 1.41 gm. Of 103 persons receiving injections of neo-arsphenamin, there was one case of collapse (after the injection of 0.3 gm. in a healthy man), two cases of exanthem, one case of generalized exfoliative dermatitis, and one fatal case after three injections of 0.3 gm. in a woman, probably due to hemorrhagic encephalitis. Since the occurrence of these grave accidents, Kuyer no longer administers to an adult Javanese more than four injections of neo-arsphenamin, of 0.3 gm. each, at intervals of one week.

VIENNA

(From Our Regular Correspondent)

Aug. 2, 1925.

The New Medical Curriculum

According to the draft of the new law, which is not likely to be changed materially before its passage, the medical curriculum in Austria will be divided into two parts. Part 1 covers five semesters' and Part 2 six semesters' work. The first semester, the student must take six hours a week of systematic anatomy; five hours each of zoology, physics and chemistry, in the forenoon, and six hours of dissection and five hours of laboratory chemistry in the afternoons, and possibly three hours of botany, in addition. The second semester calls for six hours of dissection, five hours of chemistry and five hours of chemical laboratory work per week. The third semester requires (forenoons) six hours of physiology, five hours of histology, three hours of embryology and three hours of topographic anatomy; afternoons, six hours of dissection, three hours of physiology laboratory work and likewise three hours of physiologic chemistry each week. The fourth semester provides for (forenoons) six hours of physiology and three hours of topographic anatomy each week; afternoons, five hours of laboratory histology, three hours of physiology laboratory work, and possibly four hours of laboratory work in embryology each week. The fifth semester, previous to New Year's, the student must pass tests in a number of subjects. During this period he need not attend lectures unless he desires. Part 2 of the course begins after New Year's, in the fifth semester. Part 2 commences with practical training in the application of medicine: elementary clinical study and care of patients, introductory courses in surgery, obstetrics and gynecology (each five hours weekly); also five hours of pathologic anatomy and two hours of pharmacology each week. The sixth semester, the student will take internal medicine and internal surgery, each seven and a half hours, and five hours each of pathologic anatomy and general experimental pathology, and, in addition (afternoons), three hours of dissection in pathologic anatomy and four hours of laboratory work in pathologic histology. In the seventh semester, the student takes up again internal medicine and surgery, each seven and a half hours; dermatology and syphilis, five hours; pathologic anatomy, five hours; pharmacology, four hours, and general experimental pathology, five hours. In the eighth semester, the course provides for: internal medicine and surgery, gynecology and obstetrics, seven and a half hours each; afternoons, dermatosyphilology and otolaryngology, five hours each; in addition, four hours of prescription writing. In the ninth semester, materia medica and gynecology, seven and a half hours each, are provided; also psychiatry and hygiene, five hours each, and legal medicine, four hours. The tenth semester opens with ophthalmology, pediatrics and hygiene, five hours each; also three hours each of dentistry, bacteriology, and practical work in legal medicine. In the eleventh and last semester, up to New Year's, the student will devote himself to surgery, seven and a half hours, and to ophthalmology and pediatrics, five hours each. The new subjects in this curriculum (the number of hours is always to be taken as "weekly") are dentistry and otolaryngology, which heretofore have not been obligatory. The examinations will cover: Part 1 of the so-called "Rigorosum" (the test for doctor of medicine): (1) zoology, (2) physics, (3) medical chemistry (including physiologic chemistry), (4) anatomy, (5) histology, (6) physiology. The tests in zoology and physics will be on the theory only; the tests in other subjects will be both from the theoretical and the practical standpoint. The tests in zoology and physics are taken in the second semester. If the student secures a good grade in these two subjects, he will be permitted to take the tests in the other subjects of Part 1 of the "Rigorosum" some time during the fifth semester, the practical examination coming first and the tests on the theory being taken a little later. Part 2 of the "Rigorosum" will comprise tests in: (1) pathologic anatomy and histology, (2) general experimental pathology, (3) pharmacology and prescription writing, (4) hygiene and legal medicine. Part 3 of the "Rigorosum" will include, as the last of the tests: (1) internal medicine, (2) surgery, (3) gynecology, (4) pediatrics, (5) ophthalmology, (6) dermatology and syphilis, (7) psychiatry and neurology, (8) otolaryingology. Parts 2 and 3 of the "Rigorosum" cannot be passed off until after the work of the tenth semester has been completed, and, as a rule, all three parts of the final examination must be taken at the same university; exceptions may, however, be made in view of peculiar conditions. If a candidate for the doctor's degree fails in three subjects of Part 1 of the "Rigorosum" (not counting zoology and physics), either in the individual practical tests or in the general test on theory, he is forever excluded from the continuation of his medical studies in Austria; nor may he secure a diploma in a foreign country and have it ratified in Austria on the basis of reciprocity. The student will likewise be excluded from further medical study if he does not pass Part 1 of the "Rigorosum" within five years after his first matriculation. These two new provisions of the law are particularly drastic, and some doubt is expressed whether it will be possible to enforce them. Internship must cover a period of at least nine months. The preliminary three months may be taken during the fifth semester in the form of propedeutics; the remaining six months must be served as an intern in a clinic or hospital ward under the direction and supervision of the administration. The student

may also be allowed to serve these six months during his vacations. During a period of at least two months he must serve in a department of internal medicine; but must not serve less than one month in any given institution. He will not receive his diploma as doctor of medicine until he has completed his nine months of internship. Students are referred to clinics or hospitals by the university authorities. The new curriculum, if it becomes a law, will go into effect with the beginning of the school year 1925-1926. All students who began their medical studies since October, 1922, will be under obligations to serve at least six months as intern before receiving their diploma. As a general thing, the medical course as it will be constituted will cover a period of six years, since most students will prefer to take their final examinations after they have served their six months' internship, as their preparation will be considerably better, at that time.

BERLIN

(From Our Regular Correspondent)

Aug. 8, 1925.

Micro-Organisms in Malignant Tumors

Immediately following the publications of Dr. Gye and Mr. J. E. Barnard in the *Lancet*, Dr. Räth, an assistant of Professor Binz, director of the chemical institute of the Berlin agricultural school, published in the *Zeitschrift für angewandte Chemie* of July 23 a short communication, from which it appears that he, also, has succeeded in finding micro-organisms in carcinoma. He said in part:

If one subjects extirpated carcinomas of man or of animals to a definite chemical process, one may secure micro-organisms from the decomposition product through cultivation on agar. That these organisms must have originated in the tumors in question cannot be denied. Organisms have been found in this manner in cancer of the breast, cancer of the liver, skin carcinoma, uterine carcinoma and carcinoma of the jaws. It seems almost superfluous to state that the utmost precautions were taken to prevent the invasion of micro-organisms from the outside. Even during their cultivation on agar or bouillon, the micro-organisms are subject to morphologic changes. Pure cultures, several days old, show, on observation with a No. 10 Zeiss lens (oil immersion, eyepiece 15), short, spore-forming bacilli, somewhat thickened in the middle. During their growth, substances with the odor of the lower fatty acids develop. When the bacillus is transferred to animals, many tumor formations of carcinomatous character are obtained.

From the tumors that yielded these micro-organisms following this chemical process no such organisms could be obtained before the chemical treatment. It is assumed that the chemical process removed investing membranes or coverings, which prevent an independent growth of the micro-organism outside the animal body. Whether the occurrence of this bacillus in the tumors justifies the conclusion that it is the causative agent of the cancer, or whether its occurrence constitutes merely a necessary associated phenomenon, it is impossible to decide, owing to the extraordinary difficulties of the subject, although the former conception is the more plausible, especially in view of the fact that, in certain instances, it has been possible, on transferring the parasites to animals, to produce growths of tumor-like character.

Death of Bernhard Naunyn

Prof. Dr. Bernhard Naunyn (Geheimer Medizinalrat), the patriarch of German clinical medicine, who has been living in retirement at Baden-Baden since 1904, has died, after a short illness, at the age of 85. Up to the very last he retained the same alertness of mind revealed in his recently published reminiscences.

A decisive influence on Naunyn's career was exerted by the highly gifted Frerichs, who took an active interest in him and in 1862 made him his assistant in the first medical clinic of the Charité Hospital in Berlin. Here Naunyn contributed to the progress of clinical medicine by studies in pathologic anatomy, medical chemistry and experimental pathology. His researches in Frerichs' clinic, more especially his fundamental studies on fevers in general and on jaundice, were instrumental in procuring for Naunyn a call to the University of Tartu (then Dorpat) as professor extraordinarius and director of the clinic of internal medicine. In 1871, he was called in the same capacity to the University of Bern (Switzerland) and the following year to Königsberg (East Prussia), when Ernst von Leyden was invited to the newly founded imperial university at Strasbourg. In 1888, also, Naunyn went to Strasbourg as the successor of Kussmaul, where he remained until 1904, when he retired from active work and settled in Baden-Baden.

As clinician in Strasbourg, Naunyn continued some of his earlier researches, and also opened up new paths of investigation, particularly in the field of nervous diseases. He took part in the studies on the localization of diseases of the brain, especially aphasia; also on brain pressure and on pain sensations and disturbances of sensation in the skin. Two of his works deserve especial mention: his description of gallstone disease and his handbook on diabetes, both of which are still indispensable to the investigator of these subjects. In 1873, in collaboration with Klebs and Schmiedeberg, Naunyn founded the *Archiv für experimentelle Pathologie und Pharmakologie*. Cooperating with Mikulicz, he created in 1878 the *Mitteilungen aus den Grenzgebieten der Medizin und Chirurgie*, in which he often wielded a lance in the controversial question as to when cases in internal medicine should be referred to the surgeon for further treatment. Many of Naunyn's pupils have achieved distinction in medicine and a number have occupied chairs in various universities. I may mention, among others, Stadelmann, Magnus-Levy, Minkowski, Schreiber and Weintraud.

After his retirement from his chair in the University of Strasbourg, Naunyn continued to discuss with great acumen and general approval many of the questions affecting the medical profession at large. During the Great War, he was very devoted in his interest in and care of sick soldiers.

Marriages

GILBERT MARTIN LOEWE, Winnetka, Ill., to Miss Alma Meertief Nachman of Montgomery, Ala., May 14.

WILLIAM RILEY BROOKSHER, JR., to Miss Thelma G. Stephens, both of Fort Smith, Ark., June 3.

ANDREW GRANT COWLES, Ardmore, Okla., to Miss Ruth E. Chapman of Waxahachie, Texas, May 12.

THOMAS MORROW SAYRE, Monroe, La., to Miss Dorothy Carter of New Orleans, June 18.

PERRY HAYNES WISEMAN, Henrietta, N. C., to Miss Grace Florence Furrh of Troy, July 7.

WILLIAM H. BROEDER, St. Louis, to Miss Clara L. Hoeckele of West Jackson, Mo., July 16.

HENRY BERNIS ALSOBROOK to Miss Ethel Irene Smith, both of New Orleans, June 17.

LOUIS DAVID MCGUIRE, Omaha, to Miss Margaret Rau of Austin, Minn., April 16.

ALFRED G. LANGMANN to Miss Margot P. Hesse, both of New York, June 3.

ELMER R. PORTER to Miss Nellie Holingsbaugh, both of Omaha, April 23.

Deaths

Archa Kelly West, Oklahoma City, Okla.; Memphis Hospital Medical College, Memphis, Tenn., 1894; member and past president of the Oklahoma State Medical Association; professor of medicine, University of Oklahoma School of Medicine; served as delegate, 1907-1908, to the American Medical Association; mayor of Smithville, 1897-1899; aged 60; died, August 10, at Salina, Colo., of heart disease.

John Henry Burke, Brooklyn; Tufts College Medical School, Boston, 1913; member of the American Urological Association; served in the M. C., U. S. Army, during the World War; on the staffs of the Long Island College Hospital and the Kings County Hospital, where he died, August 12, of appendicitis, aged 35.

Seth Wilson Dodge, Fairbury, Neb.; State University of Iowa College of Medicine, Iowa City, 1882; member of the Nebraska State Medical Association; formerly mayor of Fairbury and for more than twenty years county coroner; aged 76; died, August 2, following a long illness.

Cecil Warren Le Grand, Hempstead, Texas; University of Alabama School of Medicine, Tuscaloosa, 1873; Jefferson Medical College of Philadelphia, 1877; member of the State Medical Association of Texas; aged 74; died, August 8, following a long illness.

Frederick Jorgen Nordby, Fort Bayard, N. M.; University of Colorado School of Medicine, Denver, 1913; member of the New Mexico Medical Society; on the staff of the U. S. Veterans' Hospital, No. 55; aged 36; died suddenly, August 14, of heart disease.

Leo A. O'Brien, Skiatook, Okla.; University Medical College of Kansas City, Mo., 1903; member of the Oklahoma State Medical Association; also a druggist; aged 44; died, August 4, at the Christian Church Hospital, Kansas City, Mo.

John Philip Reilly ✠ Elizabeth, N. J.; Bellevue Hospital Medical College, New York, 1888; president of board of education and president of the medical staff of St. Elizabeth Hospital, where he died, August 14, of pernicious anemia.

George Marion French, Springfield, Ill.; College of Physicians and Surgeons, Chicago, 1901; medical director of the Springfield Life Insurance Company; aged 45; died, August 12, at St. Luke's Hospital, Chicago, of peritonitis.

George Edmund Skiff, Warsaw, N. Y.; University of Buffalo Department of Medicine, 1920; member of the Medical Society of the State of New York; on the staff of the Warsaw Hospital, where he died, August 9, aged 31.

Paul R. Chambliss, Gray, Ga.; Hospital Medical College, Atlanta, 1911; member of the Medical Association of Georgia; aged 39; died, August 4, at a hospital in Hot Springs National Park, Ark.

George D. Bagnall, Stoneboro, Pa.; College of Physicians and Surgeons, Chicago, 1890; aged 59; died, August 7, at a hospital in Mercer, of complications, following an appendectomy.

George B. Nance, Monroe, N. C.; Jefferson Medical College of Philadelphia, 1885; member of the Medical Society of the State of North Carolina; aged 66; died, August 8, of heart disease.

Arlando Columbus Curl, Schell City, Mo.; Missouri Medical College, St. Louis, 1888; member of the Missouri State Medical Association; aged 73; died, August 7, of cerebral hemorrhage.

Arthur Galen Stevens, South Webster, Ohio; Starling Medical College, Columbus, 1904; member of the Ohio State Medical Association; aged 45; died, August 6, of cerebral hemorrhage.

John Albert Noble, San Francisco; University of California Medical School, San Francisco, 1888; aged 56; died, August 8, at St. Luke's Hospital, of arteriosclerosis and nephritis.

John Llewellyn Griffiths, Taylor, Pa.; University of Vermont College of Medicine, Burlington, 1884; member of the Medical Society of the State of Pennsylvania; aged 79; died, July 30.

Paul Richmond, Washington, D. C.; Georgetown University School of Medicine, Washington, 1892; aged 75; died, August 8, at Idylwood, Va., of chronic myocarditis and aortitis.

William Patrick Ahearn ✠ Grantwood, N. J.; Fordham University School of Medicine, New York, 1913; aged 41; died, July 28, of injuries received in an automobile accident.

Warrick P. Kyle, Columbus, Ohio; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1881; aged 70; died suddenly, July 29.

William T. Bolding, Hamilton, Texas; Kentucky School of Medicine, Louisville, 1901; member of the State Medical Association of Texas; aged 49; died, August 5.

Edgar O'Brien Freligh ✠ Stillwater, Minn.; University of Bishop College Faculty of Medicine, Montreal, Que., Canada, 1886; aged 68; died, May 31, of angina pectoris.

Francesco A. Caruso, Newark, N. J.; University of Naples, Italy, 1902; on the staff of St. Gerard's Newark Italian Hospital; aged 47; died, August 7, of heart disease.

William Henry White, Whiton, Md.; University of Maryland School of Medicine, Baltimore, 1887; aged 62; died, July 18, at Salisbury, following a long illness.

Rufus James Hyde, Saugerties, N. Y.; University of Michigan Homeopathic Medical School, Ann Arbor, 1884; aged 66; died, July 31, following a long illness.

Thomas Sheldon Hicks, Wolcott, N. Y.; New York Homeopathic Medical College and Hospital, 1902; aged 45; was killed, August 4, in an automobile accident.

Robert Early Howard ✠ Durant, Miss.; Kentucky School of Medicine, Louisville, 1876; formerly county health officer; aged 68; died, August 7, of pneumonia.

William Freeman, Fullerton, Calif.; Indiana Medical College, Indianapolis, 1877; member of the California Medical Association; aged 84; died, June 29.

James Franklin Preston, Effingham, Kan.; University of Louisville (Ky.) School of Medicine, 1892; aged 77; died, July 12, following a long illness.

John L. Dismukes, Mayfield, Ky.; Kentucky School of Medicine, Louisville, 1894; county health officer; aged 50; died, August 3, of tuberculosis.

Walter Roland Elliott ✠ West Collingswood, N. J.; College of Physicians and Surgeons, Baltimore, 1903; aged 55; died, August 8, of angina pectoris.

George W. Bell, Pine Bluff, Ark. (licensed, Arkansas, 1903); member of the state legislature; aged 61; died, August 3, at New York.

Lutrelle Henderson ✠ Marysville, Ohio; Starling Medical College, Columbus, 1886; aged 66; died, August 5, of diabetes mellitus and gangrene.

V. Norris, Childress, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1892; aged 57; died, August 6.

Frederick Craft Hetzel ✠ Staten Island, N. Y.; Long Island College Hospital, Brooklyn, 1919; aged 33; died, August 7, of appendicitis.

Daniel Patterson Blose, McKeesport, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1900; aged 47; died, August 2.

Albert L. Brown, Sandy, Utah; Wisconsin Eclectic Medical School, Milwaukee, 1896; aged 82; died, August 4, of cardiorenal disease.

Smith Graves Beatty ✠ Kane, Pa.; College of Physicians and Surgeons, Baltimore, 1882; aged 71; died, May 29, of heart disease.

Moses Newkirk, Mercedes, Argentine, South America; University of Michigan Medical School, Ann Arbor, 1877; died, August 4.

James C. Dunbar, Vanetta, W. Va. (licensed, West Virginia, 1896); aged 60; died, August 3, of carcinoma of the stomach.

Wallace C. Stratton, Oakland, Calif.; Boston University School of Medicine, 1878; aged 70; died, April 17, of influenza.

George H. Treadgold ✠ Port Huron, Mich.; Detroit College of Medicine and Surgery, 1886; aged 62; died, August 8.

William Hall, Cambridge, Mass.; L.R.C.P., Edinburgh, Scotland, 1885; aged 67; died, August 5, of sciatica.

James R. Brown, Malta Bend, Mo.; Missouri Medical College, St. Louis, 1878; aged 69; died, August 2.

Frank R. Carvell, Cleveland; Cleveland Homeopathic Medical College, 1902; aged 67; died, August 5.

George B. Stemen, Fort Wayne, Ind.; Fort Wayne College of Medicine, 1882; aged 66; died, August 7.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

ANOTHER MAIL-ORDER REJUVENATING CONCERN DECLARED A FRAUD

The Melton Laboratories and Associated Fakes of H. M. Stunz Debarred from the United States Mail

For two or three years past a mail-order concern calling itself the "Melton Laboratories, Manufacturing Chemists," has been defrauding the public from Kansas City, Mo., in the sale of an alleged sex rejuvenator. The "Melton Laboratories" were not laboratories, and the "Manufacturing Chemists" were neither chemists nor manufacturers. The thing

Awaken Your Glands and Nerves and Regain the Vigor of Youth

Thousands Tell of Being Rejuvenated and Invigorated by a Remarkable Medical Discovery—Men 60 to 80 Years Old Say They Are Now "As Good As Ever"—Many Report Surprising Evidence of Increase in 24 Hours!

Aged Folk Report Rejuvenation; Young Tell of Being Invigorated

Discovered by Famous Scientists

Money-Back Guarantee

MAIL THIS COUPON

MELTON LABORATORIES, 1671 Melton Building, Kansas City, Mo.

Greatly reduced reproduction of a typical full-page advertisement in a daily paper (in this case the Washington *Herald*) of the Melton Laboratories fraud.

was a crude, mail-order swindle operated mainly by Harold Melton Stunz. It seems to have been a family affair, for C. Stunz (father of Harold Melton), W. D. and Ray M. Stunz (brothers of Harold Melton) and Bessie Stunz (wife of Harold Melton) were, according to the federal investigators, owners of this fakery.

The concern did a gross business last year of $400,000. It employed no physicians or chemists. The advertising for last year cost over $200,000, which was distributed among forty-five daily papers—the greatest beneficiaries of medical swindles and the means whereby such frauds are able to fleece the public. A few of these advertisements have been collected by the Bureau of Investigation, and by referring to the files we find that the Washington *Herald*, an "American Paper for the American People," carried at least one full page. The Boston *American*, "A Paper for People Who Think," got another full page. The Buffalo *Inquirer*, "The People's Paper," also got a full page. The Chicago *Herald-Examiner*, whose slogan is "Truth—Justice—Public Service," carried a full page. The Memphis *Commercial Appeal* got an entire page. And, of course, there were many, many others. Further, as has been brought out before in discussions of medical frauds that have been financial successes, the concern apparently had no difficulty in getting a testimonial of the high commercial standing of the Melton Laboratories (which were not laboratories) from a local bank.

The nostrum put out by the Melton Laboratories (Stunz) was called "Korex." The full formula will be given in what follows. Later Stunz had two additional drugs added to Korex and put it out under the name "Hiobin," and created a "paper" organization called "The Hiobin Company" for its exploitation.

Then in order not to overlook any possible victims, Stunz brought out a "kidney cure" that he called "Renex." This was sold by the Renex Company, another "paper" concern. All three of these nostrums came from the same address, but the public had no means of knowing it as the addresses were camouflaged so as to cover this fact. Korex came from the Melton Building; Hiobin came from the Hoffman Building; Renex came from 322 E. 13th Street. The addresses were all the same—three fraud factories in one.

On August 13, 1925, the Melton Laboratories, H. M. Stunz, manager, the Hiobin Company and the Renex Company had a fraud order issued against them, debarring them from the use of the mails. The story of this fraud is well brought out in the Memorandum prepared by Judge Edgar M. Blessing, Solicitor of the Post Office Department, for the Postmaster General, in which the Solicitor recommended the issuance of the fraud order. The mails were closed to the concern August 13, 1925.

It appears that Stunz and his variously named concerns were called on by the federal authorities to show cause on July 16, 1925, why a fraud order should not be issued against them. Stunz appeared at Washington on the date set accompanied by W. M. Ketcham of Chicago and F. W. Cox of Baltimore, his attorneys. One W. M. Ketcham defended Branaman in the deafness cure quackery that the government put out of business some years ago and also defended those two choice quacks, F. W. Willard and Oren Oneal, who defrauded the public out of $75,000 a year by means of a fraudulent cure for pyorrhea. In THE JOURNAL'S article on the Willard fraud it was brought out that W. M. Ketcham was operating a business under the somewhat imposing name "Federal Advisory Association," and that Ketcham had previously been a Post Office Inspector for some years but in 1910 went into business for himself. The apparent function of the "Federal Advisory Association," according to THE JOURNAL'S previous article, was to furnish information to those willing to pay for it on how to use the United States mails without technically violating the law. It also appears to essay to offer suggestions on the wording of "patent medicine" labels. The June, 1925, issue of the Chicago telephone directory gives the Federal Advisory Association and W. M. Ketcham at the same address and with the same telephone number.

To quote from Judge Blessing's memorandum:

"Harold M. Stunz operates through the mails the 'Melton Laboratories,' the 'Renex Company' and the 'Hiobin Company' from the same offices in the Hoffman Building, at 1322 Oak Street, Kansas City, Missouri. The oldest concern is the Melton Laboratories, under which name a medicine called 'Korex Compound' is sold for the treatment and cure of lost manhood and allied ailments. Soon after engaging in this business, Mr. Stunz claims that he received many calls for a so-called kidney remedy, and he therefore requested a certain manufacturing drug company to recommend a pill for that purpose, which the concern did, and he then purchased these pills in wholesale quantities, re-packed, re-labeled and retailed them through the mails under the name 'Renex,' advertising them, as will be shown later, as a scientific discovery possessing great value.

"The evidence shows that the advertising matter of the Melton Laboratories became so objectionable to one of the proprietors of the advertising agency handling it that it was arranged to sell 'Korex Compound' in drug stores, and to take its place in the mails, a new medicine called 'Hiobin' was

'discovered' for the treatment of lost manhood. The ingredients in 'Hiobin,' I find from the evidence, are identical with those in Korex Compound, except for the addition of a small quantity of iron peptonate and phenolphthalein, which, I find, add little or no value to the preparation as a treatment for the diseases and ailments set forth in the literature. According to the evidence, persons on the mailing list of the Melton Laboratories are being circularized in an effort to sell the 'new discovery' when they can no longer be induced to use 'Korex.'"

The memorandum then gives the names of the various members of the Stunz family that were interested in these frauds, and brings out the fact that the concern had no laboratory, that it manufactured no medicine and that the three preparations were "purchased from wholesale manufacturing drug houses in New York City and in Cincinnati, Ohio." Judge Blessing then continues:

"According to the evidence, the several medicines contain the following ingredients:

"Korex: Yeast Vitamines	1 gr. to tablet
Ext. Nux Vomica	⅛ gr. to tablet
Yohimbin Hydrochlorid	1/24 gr. to tablet
Lecithin	1/16 gr. to tablet
"Hiobin: Same ingredients as Korex, *with addition of*	
Iron peptonate	1 gr. to each tablet
Phenolphthalein	1/16 gr. to each tablet
Renex:	
Ext. Uva Ursi	½ gr.
Podophyllin	⅛ gr.
Apocynin	⅛ gr.
Leptandria	¼ gr.
Mass Copaiba	1 gr.
Potassium Nitrate	1 gr.
Oil Juniper	q. s.

"The literature of the Melton Laboratories is replete with extravagant and unwarranted statements regarding both the history and therapeutic value of 'Korex Compound' . . ."

A typical advertisement of the Melton Laboratories is then quoted in the memorandum, and the Solicitor brings out that Stunz, when interviewed by one of the Post Office Inspectors, admitted that the only basis he had for the claims made in his literature was "obtained from certain medical books, literature supplied by drug houses, and testimonials." Stunz admitted further that he did not know what "lost manhood" is, did not know how to cure it, and did not believe there was a cure for it. He also admitted that he know nothing about drug therapy, and did not know what effect his medicine might have in any particular case.

The government in its case against these quacks called on Dr. L. F. Kebler, who is in charge of Special Collaborative Investigations, Bureau of Chemistry, Department of Agriculture, and whose qualifications as an expert were conceded by Stunz's own attorneys. Dr. Kebler brought out in his testimony that all of the drugs in the Korex formula were well known and that the product represented nothing new, novel or wonderful, nor did it require years of scientific research to perfect it. He brought out further the fact that the Korex mixture far from being harmless was in fact distinctly poisonous. Dr. Kebler declared that the essential action of Korex was that of a stimulant due to the nux vomica it contained. He stated, also, that in order to obtain the views of reputable physicians who specialize in the treatment of ailments of the male organs, a questionnaire was addressed to nearly 500 physicians who are either members of the American Urological Society or have specialized in the action of drugs. One of the questions was: "Do you know of any drug or mixture of drugs that will remedy or cure impotence or lost manhood?" Of couse, not a single reply came in the affirmative.

Similar testimony was produced to show the worthlessness of Hiobin (the modified Korex) and Renex. It was also brought out that in one of the form letters sent out by the Hiobin Company there was a postscript declaring that the Hiobin Company had "no connection with any other concern selling a tonic or invigorating treatment." The facts were, of course, that the Hiobin Company was merely another trade name used by Stunz in his fraudulent business.

All letters of inquiry and all money sent in to either the Hiobin Co., the Renex Co. or the Melton Laboratories were handled in the same offices by the same people. The memorandum continues:

"Regarding the product 'Renex,' which Stunz, under the name of Renex Company, represents will cure persons of kidney, bladder and prostatic trouble by getting at the 'cause' thereof, and that the medicine was so efficient that his company was 'asked to make it available to the public,' I find from the evidence that 'Renex' will not get at the causes of the several diseases and ailments referred to in the concern's literature; that it will not bring about any real restoration in the case of kidney ailments but does have a tendency to render the urine antiseptic in certain cases. Aside from this it is of no value.

"The medical testimony shows that 'Renex' will not bring about relief, or cure any cases of prostatic trouble, as claimed in the Renex literature. It is also claimed by the Renex Company that it has 'unlimited facilities for research' at its disposal. As has already been stated, the proprietors of 'Renex,' 'Hiobin' and 'Korex' have no 'laboratories,' nor have they the 'facilities' as indicated. 'Renex' is not a recent discovery, as persons are led to believe by the literature, but the product is composed of old and well known drugs. The pills were sold by the drug manufacturing company long before their exploitation under the name 'Renex' was begun by Mr. Stunz. 'Renex' is also held out in the literature as

What a Kansas City Bank Says About Us
Re-Energize Your System
and Laugh at the Years!
A NEW Medical Compound With a Remarkable History
Why Not Get All You Can Out of Life?
THE HIOBIN COMPANY
HIOBIN

greatly reduced reproduction of part of one of the "Hiobin" advertising circulars. Note the testimonial from a local bank certifying that the management of the company were "thoroughly reliable men of good standing."

efficacious in the prevention and treatment of Bright's Disease. The evidence shows that it will neither prevent nor cure Bright's disease."

In closing, the Solicitor's memorandum says:

"At the close of the hearing, Mr. Stunz, personally, and through his attorneys, requested that no fraud order be issued against his several companies, if possible, and particularly not against his personal name. He alleged he was connected with other organizations and enterprises that enjoy a good reputation in the community and that he would be seriously embarrassed and hindered in work not at all associated with the several enterprises under consideration. He furnished letters of endorsement from prominent persons as to his personal reputation and standing in his community and stated that he was willing to execute an affidavit to the effect that he had absolutely discontinued and abandoned the several mail order enterprises now being considered by this office. In view of these circumstances, I have to recommend that the personal name of H. M. Stunz be not included in the fraud order."

Judge Edgar M. Blessing summed up his memorandum by the declaration that the evidence showed, and he had so found, that this was a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises and that he therefore recommended that a fraud order be issued against the "Melton Laboratories," "H. M Stunz, manager," the "Hiobin Company" and the "Renex Company." Unfortunately the fraud order was not extended to cover the personal mail of H. M. Stunz.

Correspondence

THE FIFTH INTERNATIONAL CONGRESS ON THE HISTORY OF MEDICINE

To the Editor:—The fifth congress to be held on the history of medicine since the foundation of the society in 1920 took place at the Athéneé in Geneva, July 20 to 25, under the presidency of Dr. Charles Greene Cumston, formerly of Boston, and now instructor in medical history in the University of Geneva. Eleven nations were represented (Belgium, Denmark, France, Great Britain, Holland, Italy, Morocco, Poland, Spain, Switzerland and the United States) and although the number of those registered was not as great as at the previous congress (influenced largely by the unfavorable rate of exchange), the percentage attending the various séances was considerably higher. Five national sections (Egypt, Greece, Portugal, Roumania and Sweden) were not represented. Each session was presided over by the representative of one of the countries participating.

In opening the congress Monday afternoon, Dr. Cumston gave an interesting talk on several men prominent in the medical history of Geneva. He pointed out that Daniel Leclerc, by the publication of his Histoire de la médecine in 1696—antedating Freind by twenty-nine years—was justly entitled to be considered the father of the history of medicine. Sarasin, Bonetus, Tronchin, Rilliet and others were mentioned. Dr. André Patry, president of the Geneva Medical Society, described the prominent rôle that Swiss ophthalmologists had played in the development of their specialty. Other welcoming addresses were made by M. André Oltramare, chief of the department of public instruction, representing the Conseil d'état of Switzerland and of the canton of Geneva; by M. Georges Werner, rector of the University of Geneva, and by Dr. Hugues Oltramare, representing the city of Geneva. After an excellent apologia for the study of the history of medicine by Tricot Royer, the president of the international association, E. Pittard gave an interesting illustrated talk on prehistoric medicine and surgery. There were about eighty persons present.

In Tuesday's program the communications in English seemed above the average, because more carefully prepared and kept within the allotted time of fifteen minutes without an enforced and hurried distortion of the latter part of the paper. De Peyer's communication possessed an added interest in that it dealt with his own ancestor, the discoverer of the lymph patches in the small intestine that bear his name. De Lint's unpublished letter of Tronchin's was important in throwing a new and more pleasant light on the character of that well known Genevese physician.

At the Wednesday sessions the outstanding contributions were: a scholarly presentation by Professor Jeanselme of Paris on the Germanic conceptions of surgical anatomy at the time of the barbarian invasions, as shown by their laws governing compensations for injury; a philosophic discussion of Paracelsus' medical views by R. O. Moore; Mrs. Lindsay's description of the growth of dentistry in England, and Wickersheimer's minute description of Maitre Gispadeu of Annecy.

At the last scientific session, Friday morning, Professor Wrzosek described how Laënnec's discovery of auscultation made more rapid headway in Poland than in other nations, and J. W. Courtney of Boston described Waterhouse's efforts to introduce Jenner's vaccination into America. De Alcalde of Madrid described the iron crowns of St. John of Jerusalem, which were used in the middle ages to cure headaches, meningitis and other conditions, and demonstrated a fine specimen that he had found in a Spanish convent. Dr. J. B. Hurry's communication on I-Em-Hetep, "He who procures peace," was read by C. J. S. Thompson. Many details of King Zoser's prime minister, who later became the medical god of Egypt, were shown to be well known through sacred writings and such statues as can be found in the Wellcome and the British Museums and his tomb and temple at Memphis. Altogether, they form a strong argument in favor of his being considered the Father of Medicine.

No description of the congress can omit the pleasant social features, which, as in the past, have formed an important and delightful part of these meetings. Monday evening, those who attended were entertained by the president at a concert and champagne supper which lasted until after midnight. After the Tuesday meeting, Dr. and Mme. Rilliet gave a garden party at their beautiful property of Vengeron, with its unsurpassed view of Mont Blanc, and showed interesting souvenirs of their grandfather, the celebrated describer of typhoid in children. That evening the beautiful annual lake illumination with fireworks was given. Wednesday, the medical treasures of the university library were exhibited, and in the evening a reception was given by the city of Geneva at the Palais Eynard. Thursday was devoted to a tour of the lake of Geneva on a special boat, giving a splendid opportunity to see this beautiful body of water in its varied aspects of sunshine and storm. Lunch at the castle of Chillon, with a tour of inspection, was followed by a banquet at the new Hotel Royal at Evian, with inspection of the Source Cachat, and Geneva was reached by 8 p. m. The congress banquet, Friday evening, terminated a delightful meeting.

The next congress will be held at Leyden in July, 1927, under the presidency of Dr. J. G. de Lint. There is every reason to hope that by that time all the important countries of Europe will have become members. In view of the considerable and increasing interest that is being taken in medical history in this country, it is regrettable that there were only four Americans attending this congress. Let us hope that a more commensurate number will be found at Leyden.

E. B. KRUMBHAAR, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TRIPLETS

To the Editor:—One of the newspapers recently published what purported to be the copy of a photograph of a set of triplets, girls of perhaps 18 or 20, who were so much alike that even their own mother could not differentiate. I also have it on medical authority, not open to question, that in one case of triplets all of the same sex there was one placenta, one chorion and two amnions, whereas in another set of varying sex there were three placentas. The inference from these data is that triplets, like twins, may all come from a single ovum, when they will be similar, or from separate ova, when they will not. But this doesn't seem to be quite enough evidence, and I am wondering whether you can give me any references, or let me know what is the general opinion.

HOWARD CRAWLEY, Philadelphia.

ANSWER.—The question has arisen whether there may occur cases of monozygotic (one-egg) triplets in human beings. Though such cases are rare, there is little question as to their authenticity. Moreover, there is no especial difficulty in accounting for the condition. In the nine-banded armadillo four fetuses from a single egg occur with great regularity, although occasionally only three fetuses or five fetuses may result. As it is now almost certain that twinning in man and in the armadillo are similar in cause and in mode, it is not too much to assume that triplets in man may arise from the second division of a twin primordium. Possibly both twins have undergone a second fission, but only three of the original four have survived.

Before attempting to decide as to the monozygotic origin of any set of triplets or quadruplets in man, one should make

an accurate comparison of palm and sole prints, and should look for evidence of mirror-image symmetry among them. A superficial resemblance is not a safe criterion of monozygotic origin even in twins, for brothers or sisters who are not twins sometimes show extraordinary resemblance.

INSULIN

To the Editor:—Does the administration of insulin produce any substance that may show in the urinary sediment on microscopic examination?

C. J. MARCH, M.D., Fordyce, Ark.

ANSWER.—Insulin is administered, as a rule, only to patients who have a shortage of insulin to begin with. When it is given in diabetes it is for the purpose of supplying a lack. All normal persons receive insulin every day from endogenous sources in large amounts. If insulin caused the appearance of a characteristic sediment in the urine, this sediment should be found in every normal urine and would be one of the normal urinary constituents. We are not aware that it does this unless, indeed, some product of glucose oxidation, such perhaps as oxalic acid, which appears in urine in the form of the familiar envelops of calcium oxalate, could be so regarded, because insulin plays an indispensable part in glucose oxidation. On the other hand, in the course of treating diabetic patients by combined insulin and dietetic therapy, profound changes in the metabolism are often produced, and coincidentally with some of these the character of the urinary sediment may be changed. Such changes are incidental to and not distinctive of insulin administration. It is also conceivable that certain preparations of insulin might contain impurities that would cause unusual sediments to appear in the urine, but we know of none such at this writing.

PREVALENCE OF GOITER

To the Editor:—In what areas of the United States is goiter most prevalent?

H. T. MCGUIGAN, M.D., Red Wing, Minn.

ANSWER.—McClendon (THE JOURNAL, May 24, 1924, p. 1668) has drawn maps of the goitrous area which, generally speaking, comprises the northern half of the United States less the New England states, part of New York and a strip along the Atlantic seaboard. It is interesting to note, in this connection, that the map showing the area in which iodin is deficient in the drinking water corresponds closely to the map of the goitrous area. These maps were made from data compiled by the Draft Board.

As an example of the amount of goiter in parts of this area, Olin (THE JOURNAL, April 26, 1924, p. 1338) found in four counties in Michigan that 47.2 per cent. of 31,612 persons examined had goiter. A more extensive survey was made in Utah recently, where 69,256 school children were examined, of whom 42.7 per cent. were positive; 81 per cent. of them had slight enlargements, 2 per cent. moderate, 1 per cent. great, and 16 per cent. were in the pregoitrous stage. Other surveys have been made in Cincinnati and in the state of Montana, where 48,000 and 14,000 school children, respectively, were examined, and the findings gave further evidence that these localities were in the area of endemic goiter.

PREGNANCY AND HYDATIDIFORM MOLE

To the Editor:—Can you give me any idea of the likelihood of a normal pregnancy in a young woman who has had two hydatid moles—one at six months, two years ago, and one at two and a half months, a few weeks ago? These are the only pregnancies she has had. She and her husband are anxious to have a child, but are now discouraged. I have read that this condition seldom occurs twice in the same woman, but this woman seems to be the exception. There is nothing in the family or personal history that has any bearing on the matter.

S. P. CARLUCCI, M.D., Endicott, N. Y.

ANSWER.—Cases are known of women who have delivered healthy children after previous hydatidiform moles, and the family may be encouraged in the hope that subsequent pregnancies would be normal.

There is, however, a certain risk which cannot be denied. The risk is, first, of a recurrence of the mole; and, secondly, of the development of malignancy after the molar pregnancy. Statistics on the former point are hard to get. Dr. Robert B. Kennedy of Detroit has collected the records of 300 moles and found four recurrences, one of three times. One case, on record, shows a recurrence of the mole in eleven pregnances. Such accidents are exceedingly rare. Statistics on the second point, that is, what percentage of moles develop malignancy, are unsatisfactory. Essen-Moeller followed up fifty cases and found 16 per cent. developed malignancy, but this was mainly in women beyond 45 years of age. In Dr. Kennedy's 300 cases, 10 per cent. developed chorio-epithelioma. If all moles were reported, the percentage would probably not be so high.

Since we do not know what is the cause of this complication of pregnancy, only a qualified promise of cure can be offered.

SUPERFLUOUS HAIR

To the Editor:—Is there any treatment for superfluous hair on the face except the electrical needle? My daughter, aged 24, has hair below the chin and below the line of the inferior maxilla. She was treated for eighteen months with the needle, but the success was poor and now she has resorted to shaving. Please give me any information you have.

M. D., Virginia.

ANSWER.—There is no way of safely removing superfluous hairs except with the electric needle. The procedure with roentgen rays is not safe. There is no objection to getting rid of the unsightly hairs, either by pulling them out or by rubbing them down with fine pumice. The hairs can be pulled out individually with a pair of epilating forceps or tweezers, or they can be pulled out with one of the epilating waxes that are for sale in the drug stores. To get rid of them by pumice, a brick of fine toilet pumice stone should be obtained; the hair is then trimmed off short, or, better, shaved, and its regrowth is prevented by the regular use of this fine pumice. It is used by rubbing the surface with it until the hairs are rubbed away; after this is once done it is easy to keep the hairs down. With a little practice the patient can learn to do this and keep all trace of hair away without irritating the skin. Of course, either pulling the hairs or rubbing them off with pumice is a procedure that has to be continued. There is no reason to believe that it makes the hairs coarser.

BLOOD LACTIC ACID

To the Editor:—How may I determine quantitatively the blood lactic acid? Has anything on the subject appeared in the literature?

P. M. SUSKI, M.D., Los Angeles.

ANSWER.—Clausen elaborated a method for the determination of lactic acid in the blood which was published in the *Journal of Biological Chemistry* (**52**:263 [May] 1922). He found a provisional normal figure of from 15 to 32 mg. per hundred cubic centimeters. There is a bibliography in connection with this article which gives other methods for the determination of lactic acid, none of which, however, seem to apply to the blood. Among several new books on blood chemistry and laboratory diagnosis, no quantitative method was found for estimating lactic acid. It seems that the test is not generally made and as yet its clinical value has not been recognized.

MENSTRUATION AFTER CONCEPTION

To the Editor:—Can a pregnant woman menstruate during the first months of pregnancy? While I consider this impossible, one of my patients assures me that in her first pregnancy she menstruated regularly until the sixth month. Can you furnish some references?

ROBERTO DEL VALLE, M.D., LaPaz, Baja Calif., Mexico.

ANSWER.—Since the two deciduae do not fuse throughout until the fifth month, it is possible for menstruation to occur after conception has taken place. A woman may have one or even several menstrual periods after pregnancy has begun, especially if conception has occurred just before a menstrual period. If such a period does occur, however, it is usually an abortive one and is scanty or abnormal in some way. Menstruation in pregnancy is likewise possible in those rare cases of double uterus in which one side harbors the ovum and the other menstruates all through pregnancy.

EXCLUSION OF SOUND

To the Editor:—Referring to the inquiry on this subject, published August 15, the Bárány noise apparatus (larmapparat) was invented by Prof. Robert Bárány of Upsala, Sweden, to shut out absolutely all hearing in the ear in which it is used. This it does very effectively. By using two of these little instruments, one in each ear, the subject is rendered "totally deaf" for the moment, and if asked to read from a book will raise his voice to a shout quite unconsciously—the so-called reading test for unilateral deafness. I think it is carried by most instrument houses. The one I have I brought over with me from Vienne several years ago.

I. W. VOORHEES, M.D., New York.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 1. Sec., Dr. Harry C. De Vighne, Juneau.

ARIZONA: Phoenix, Oct. 6-7. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

COLORADO: Denver, Oct. 6. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Oct. 13. Sec., Dr. Edgar P. Copeland, Stoneleigh Court, Washington.

FLORIDA: Tallahassee, Oct. 13-14. Sec., Dr. W. M. Rowlett, Citizens Bank Building, Tampa.

GEORGIA: Atlanta, Oct. 13-15. Sec., Dr. C. T. Nolan, Marietta.

HAWAII: Honolulu, Oct. 12-15. Sec., Dr. Guy C. Milnor, 401 Beretania St., Honolulu.

IDAHO: Boise, Oct. 6. Commissioner of Law Enforcement, Mr. F. A. Jeter, Boise.

ILLINOIS: Chicago, Oct. 6-8. Director, Mr. A. M. Shelton, Capitol Bldg., Springfield.

KANSAS: Topeka, Oct. 13. Sec., Dr. Albert S. Ross, Sabetha.

MICHIGAN: Lansing, Oct. 13-15. Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, Oct. 6-8. Sec., Dr. Thomas S. McDavitt, Lowry Bldg., St. Paul.

MONTANA: Helena, Oct. 6. Sec., Dr. S. A. Cooney, Power Bldg., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: Part III, Baltimore, Oct. 15. All applications for this examination must be made on or before Oct. 1. Sec., Dr. J. S. Rodman, 1600 Walnut St., Philadelphia.

NEW HAMPSHIRE: Concord, Sept. 10-11. Sec., Dr. Charles Duncan, Concord.

NEW MEXICO: Santa Fe, Oct. 12-13. Sec., Dr. W. T. Joyner, Roswell.

NEW YORK: Albany, Buffalo, New York City and Syracuse, Sept. 21-24. Chief, Education Dept., Mr. Herbert J. Hamilton, Albany.

OKLAHOMA: Oklahoma City, Sept. 8-9. Sec., Dr. James M. Byrum, Shawnee.

PORTO RICO: San Juan, Sept. 1. Sec., Dr. Diego A. Biascoschea, 3 Allen St., San Juan.

RHODE ISLAND: Providence, Oct. 1. Sec., Dr. Byron U. Richards, State House, Providence.

UTAH: Salt Lake City, Oct. 6. Director of Regis., Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

WYOMING: Cheyenne, Oct. 5-7. Sec., Dr. G. M. Anderson, State Capitol, Cheyenne.

AMERICAN BOARD OF OTOLARYNGOLOGY

Dr. Hanau W. Loeb, secretary of the American Board of Otolaryngology, has sent in a report of the examination held at Philadelphia, May 26, 1925. Altogether 157 candidates were examined, and of these 137 passed and 20 failed. The results are given as follows:

PASSED	Number
University of Pennsylvania	14
Long Island College Hospital	6
Columbia University	4
Tulane University	2
Women's Medical College of Pennsylvania	1
St. Louis University	2
Hahnemann Medical College of Philadelphia	4
Hahnemann Medical College of Chicago	1
University of Indiana	3
Medical College of Virginia	3
University of Virginia	5
Johns Hopkins University	2
New York Homeopathic Medical College	4
Harvard University	6
Medico-Chirurgical College	1
Lincoln Memorial Hospital	3
University of Maryland	1
Detroit College of Medicine	1
Marion Sims College of Medicine	11
Jefferson Medical College	1
Northwestern University	2
University Medical College	1
Ohio State University	1
University of Nashville	2
Syracuse University	9
University and Bellevue Hospital Medical School	2
University of Michigan	1
University of California	1
Queens University	2
Bowdoin Medical College	1
Western Reserve University	1
University of Pittsburgh	1
Cornell University	1
University of Cincinnati	1
New York University Medical College	1
Fordham University	1
Memphis Hospital Medical College	1
College of Medicine and Surgery, Chicago	3
Rush Medical College	2
University of Buffalo	1
Vanderbilt University	2
Georgetown University	3
Albany Medical College	2
University of Texas	4
Tufts Medical College	2
University of Tennessee	1
University of Louisville	1
University of Western Ontario	1
College of Physicians and Surgeons, St. Louis	1
University of Vienna	1
University of Georgia	1
Boston University	1
Baltimore Medical College	1
Washington University	1
Barnes Medical College	1
Medical College of the State of South Carolina	1
University of West Virginia	1
Total	137

FAILED	Number
Tufts Medical College	2
University of Pennsylvania	2
Jefferson Medical College	2
University of Pittsburgh	2
Keokuk Medical College	1
Columbia University	1
Marquette University	2
Eclectic Medical College	1
University of Iowa	2
University of Nashville	1
University of Tennessee	1
University and Bellevue Hospital Medical School	2
Ohio State University	1
Rush Medical College	1
Total	20

Book Notices

WHEN LIFE LOSES ITS ZEST. By Abraham Myerson, M.D., Professor of Neurology, Tufts College Medical School. Mind and Health Series, Edited by H. Addington Bruce, A.M. Cloth. Price, $1.75 net. Pp. 218. Boston: Little, Brown & Co., 1925.

The key word of Dr. Myerson is "anhedonia," a complex condition with three factors: (1) loss or diminution of energy feeling; (2) loss or diminution of desire and satisfaction, and (3) restlessness of body and mind; in other words, what the man on the street would call a lack of "pep." Dr. Myerson discusses the relative importance of various factors in the development of this complex, which, by the way, is also called neurasthenia, psychasthenia and other asthenias. He blames it for all sorts of excesses, including drug addiction and sexual perversion. He considers it responsible for big game hunting, the fear of crowds and what not. The book is interesting, but somehow gives one the impression that everything has been sacrificed to the building up of the author's case. The term "anhedonia" seems to be utilized as a sort of general catch-basin for the inclusion of every mental abnormality so that the author may outline a system of physical and mental hygiene surrounding it. His system for the prevention and cure of anhedonia naturally involves the application of opposite principles of living. It calls for relaxations so that renewed energy may be obtained, for gratification so that hunger may be appeased, and abstinence so that hunger may reoccur. "Oliver Wendell Holmes pointed out long ago," says Dr. Myerson, "that life can be compared to the heart beat"—a series of alternating contractions and relaxations. His hope for humanity is a life of this type rather than one that will consist wholly of contractions or wholly of relaxations.

LEXIKON DER ERNÄHRUNGSKUNDE. Herausgegeben von Dr. E. Mayerhofer, Professor an der Universität Agram, und Dr. C. Pirquet, Professor an der Universität Wien. Paper. Lieferung 1. Price, 2.10 goldmarks. Pp. 144. Lieferung 2. Price, 7 goldmarks. Pp. 145-336. Vienna: Julius Springer, 1925.

This encyclopedic work was started by the Rikola press in Vienna, but for some reason has been taken over by Julius Springer. The number of parts to be issued is not stated, but the articles are arranged alphabetically and the first part starts with Aal and ends with Butterschmalz, while the second goes from Caju to Geflügel, so it is evidently to be in eight parts. It is financed by Mr. and Mrs. Auguste Richard of New York and Mrs. Augustus Hemenway of Boston. In addition to the editors there is a staff of twenty-one contributors. The work is simply a reference handbook of nutrition, dietetics and foodstuffs, with some biographic and historical material. It contains a vast amount of information on these subjects and is a tribute to Teutonic thoroughness; but, as is the case with such works, the articles

are uneven and some are faulty. For example, in the nine line article on Bergius Benegt, a Swedish gastronomer, three lines and a half are devoted to the subject, telling that half of his book, title and date omitted, is devoted to cane sugar. The remainder of the article concerns beet and cane sugar, and the information is irrelevant. The book is another example of the desire of many writers to start new systems of nomenclature. In it foods are given numbers, a so-called Ziffernsystem or Systemzahl. All foods are divided into nine classes and each is known by a numeral; then comes a decimal, and further, apparently arbitrary, numerals are added to indicate the particular article. Mother's milk is 1.0, milk ale is 6.7383. In addition to this, the foods are designated by a Pirquet formula; for example, the formula for anchovies is 6 (T-A) + 7.5 F. No explanation of the formulas is given in the introduction, but probably will appear later. Sometimes the composition of foods is given and sometimes not. The vitamin content is sometimes noted by adding a vowel; thus, *a* means that a food has a normal vitamin content, whatever that may mean, *e* means a high content, and *i* a very high content, *o* a lessening and *u* an absence of vitamins. No account is taken of the various vitamins. Occasionally the food values are given in calories, but usually the new system is followed. This has never been used much in America and probably not much anywhere except directly under Pirquet's influence. The book will not make much of an appeal to English speaking peoples.

PEDIATRICS OF THE PAST. An anthology compiled and edited by John Ruhräh, M.D., Professor of Diseases of Children, University of Maryland. With a Foreword by Fielding H. Garrison, M.D. Cloth. Price, $10. Pp. 592, with 72 illustrations. New York: Paul B. Hoeber, Inc., 1925.

This volume is in the nature of an anthology of contributions to pediatric literature by writers of the past, beginning with Hippocrates in the fifth century B. C., and proceeding to the middle of the nineteenth century. To it Dr. Fielding H. Garrison has contributed a foreword in his usual scholarly style. Dr. Ruhräh, in his own introduction to the book, makes the reader partake of his esthetic interest, and by quaint turns of thought gives one a foretaste of the feast of humor and interest that is to follow. Indeed, the gastronomic metaphor is warranted by the final sentence of the introduction, in which Dr. Ruhräh says, "Just enough of each author considered is given to whet the appetite and prepare the palate for the pièce de résistance which follows. This, then, is a sort of literary hors d'œuvres which may be tasted or passed by as suits the fancy of the reader." Each of the authors cited in the text is introduced by a brief historical statement with particular reference to his pediatric interests. A special chapter is devoted to pediatric poems. The book concludes with two collections of pediatric bibliographies that constitute an adequate reference for those who are interested in historical research in this field. The volume is illustrated with some fifty excellent line drawings and reproductions of ancient works. The publisher has added greatly to the merit of the work by the selection of an artistic font of type. The book is also printed on excellent stock with unusually fine typography. Here is a volume that has a particular appeal, not only for the pediatrician and medical historian, but also for all physicians who respect the art as well as the practice of medicine.

STUDIEN ÜBER ICHTHYOSIS CONGENITA S. FOETALIS. Von Ake Ingman. Paper. Pp. 261, with 9 illustrations. Stockholm: P. A. Norstedt & Söner, 1924.

The author describes five cases of ichthyosis congenita in syphilitic infants. In the first two cases, *Spirochaeta pallida* was demonstrated in the umbilical cord. In the last three cases the parents were both syphilitic. In the second case described, there was a blood relationship between the parents. The author discusses in detail the possible influence of the syphilitic infection in these cases, and also the question of consanguineous marriage. Following a detailed description of his cases covering his histologic findings, he gives an excellent review of previously reported literature; this is followed by a general discussion of possible etiology and pathogenesis, diagnosis, prognosis and treatment.

Medicolegal

Where Medical Classification of Hernia Is Unimportant

(Klika v. Independent School Dist. No. 79 (Minn.), 202 N. W. R. 30)

The Supreme Court of Minnesota, in remanding for a rehearing this proceeding, under the workmen's compensation act, in which the industrial commission denied compensation for an inguinal hernia alleged to have been caused by a strain while the claimant was working on the defendant's grounds, holds that an inguinal hernia, the development of which is caused by overexertion or strain, is an "accidental injury" within the workmen's compensation act of that state, and is compensable. It is unimportant in the administration of the law whether from a medical or scientific standpoint hernia is classed as a disease or a malformation or is otherwise designated; nor is it important that the employee was predisposed thereto. The law concerns itself only with the legal cause. Where the evidence points forcefully to an unusual strain in the course of employment as the legal cause of the development of a hernia, and the asserted medical view that hernia is a progressive disease is so emphasized and so permeates the consideration of the case as to obscure the search for the legal cause, a rehearing should be granted.

Liability of Retailer Selling Unwholesome Meat

(Portage Markets Co. v. George (Ohio), 146 N. E. R. 283)

The Supreme Court of Ohio, in affirming a judgment for $5,000 damages in favor of plaintiff George, a boy, aged 12 years, who was alleged to have suffered a severe infection in the digestive organs and blood-making processes, which brought on him serious illness, from eating of a veal roast which the defendant company sold to his mother, says that the jury found that the roast was unwholesome at the time it was sold to the plaintiff's mother. The violation of the pure food laws of Ohio by the sale of unwholesome meat is negligence per se (by itself), and may be the basis for a recovery of damages by the user of such meat, who suffers injury proximately resulting therefrom, provided the user is not himself guilty of negligence in the care, preparation, cooking, or in any manner which contributes directly to his injury. In an action for damages against a retail meat vendor, growing out of the sale of unwholesome veal in violation of the pure food laws of Ohio, it is not error for the court to charge the jury:

> Whether or not the defendant intended to violate the law does not make any difference. Whether the defendant or its servant knew that the veal was unwholesome, if it was unwholesome at the time it was sold, makes no difference. Lack of intent to violate the law is no defense to the defendant. The defendant's ignorance of the condition of the veal at the time it was sold is no defense.

Testimony Required Concerning Roentgen-Ray Plates

(Joy v. Flax (N. J.), 127 Atl. R. 596)

The Supreme Court of New Jersey, in reversing a judgment for $3,500 damages rendered in favor of the plaintiff, whose skull was fractured in a collision of automobiles alleged to have been caused by the defendant's negligence, says that a physician whom the plaintiff called as a witness was shown some roentgen-ray plates and was asked what he found as to the condition of the plaintiff's skull. This question was objected to on the ground that the plates were not taken under the physician's supervision. The trial court permitted the question to be answered, and also admitted in evidence over objection the roentgen-ray plates without proof that they were plates of the skull of the plaintiff, depicting the injury to his skull. The court said that proof was not necessary, if the physician testified that they were plates used in the treatment and diagnosis of the injury. This ruling of the trial judge was wrong. The general principles governing the admission in evidence of roentgen-ray plates are the same as those which govern the admission in evidence of photographs. By the use of roentgen rays, a representation of things not discoverable or observable by the use of ordinary eyesight is

obtained. Whether or not the roentgen-ray plate truly depicts what is not discernible to the eye depends, in a large measure, on the correctness of the process and instruments used in making the plates. To justify the admission of such plates in evidence there must be testimony of the trustworthiness of the process and instruments used to such an extent as to apprise the court that the method used to obtain the plates was one generally recognized as trustworthy. There must also be testimony that the plates depict the condition of the body or the part of the body of the person purporting to be the subject of the plates.

Rules as to Physicians Apply to Others—Charge

(Black v. Bearden (Ark.), 268 S. W. R. 27)

The Supreme Court of Arkansas, in reversing, on the appeal of defendant Black, a judgment that was rendered against him, says that the action was brought to recover damages for alleged malpractice and overcharge by the defendant as a dentist; but, there being no testimony on which to submit the question of overcharge to the jury, it was error to submit it. In the case of *Guild* v. *Whitlow*, 162 Ark. 108, the defendant contended that he was induced to pay a surgeon a specified amount for an operation on his representation that such a sum was a reasonable charge. The court held that he could not set aside the contract on the ground of fraud simply because the fee was unreasonable. It further said that it was not sufficient to show that the contract was procured by fraud to prove that the surgeon charged more than other surgeons charged for a similar operation in the same city. There must be some mental distress caused by the attending circumstances, which would amount to fraud in law, because the party seeking to enforce his contract had taken an unconscionable advantage of one who, under the circumstances, had a right to rely on his representation that the fee was a reasonable one. In that case the contract was made before the operation was performed. Here the same principle applied, the services having been performed before the fee charged by the dentist was paid, the plaintiff being under no duress whatever, but making the payment of his own volition simply because the dentist told him the charge was a reasonable one. That was not sufficient to establish fraud. Again, the supreme court says in this case that the rules governing the duty and liability of physicians and surgeons in the performance of professional services are applicable to practitioners of the kindred branches of the healing art, such as dentists, oculists and manipulators of roentgen-ray machines.

Rules Applied to Contracts Between Physicians

(Jones v. Kessler (W. Va.), 126 S. E. R. 344)

The Supreme Court of Appeals of West Virginia, in affirming a judgment which set aside a verdict rendered in favor of the plaintiff for $2,750.13 for surgical fees and $40,000 for damages, and which granted the defendant a new trial, says that the action was one for the alleged breach of contracts alleged to have been made between the plaintiff and the defendant, physicians and surgeons. The plaintiff offered to prove that at the time the written contract between him and the defendant was entered into the written agreement was not intended to and did not cover the entire contract, but was intended to cover only the manner of payment and consideration for the contract then and there being considered; that the contract had been discussed in a general way; and that after the execution of such contract which had been discussed, a subsequent agreement was entered into covering the matters that had been intentionally left out of the written contract. On objection by the defendant, the lower court rejected this testimony; and no error is found in its action in doing so. The written agreement was unambiguous in its terms. The interest conveyed by the defendant to the plaintiff in certain hospitals was fully described. The consideration was set out with particularity. The writing on its face was couched in such terms as imported a legal obligation without any uncertainty as to the object or extent of the engagement. The change that was sought to be ingrafted on the written instrument by oral evidence—that of establishing a clinic in connection with the hospitals—was so closely connected with the principal transaction as to form a part and parcel of it. This could not be done. The general rule that all prior negotiations are merged in the written contract finally agreed on and apparently complete and unambiguous, and that oral evidence is not admissible to add to or vary its terms, is well settled. Likewise, as a general rule, oral testimony is not admissible to contradict or vary the terms of a written instrument, by attempting to show either prior negotiations or a contemporaneous oral agreement.

But a written contract may be modified or its terms altered by a subsequent valid oral agreement, and this may be shown in a proper case. As a rule, a consideration must be shown. In this case the trial court permitted evidence to go to the jury tending to prove a subsequent agreement of the plaintiff with the defendant concerning an interest in surgical fees that might be thereafter earned under a partnership arrangement then existing between the defendant and certain other physicians and surgeons. It was urged by the defendant that there was no consideration for this alleged subsequent oral agreement between him and the plaintiff. However, if the consideration named in the written instrument in controversy did not form a consideration for the subsequent oral agreement, the labor that the plaintiff would perform in order to share in said surgical fees would be a consideration. This testimony was properly admitted.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 20-24. Dr. Luther C. Peter, Chestnut and 20th Streets, Philadelphia, Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 16-18. Dr. James E. Davis, 111 Josephine Avenue, Detroit, Secretary.

American Association of Railway Surgeons, Chicago, Oct. 21-23. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.

American College of Radiology and Physiotherapy, Chicago, Oct. 19-22. Dr. Roy W. Fouts, 121 South 33d Street, Omaha, Neb., Secretary.

American Electrotherapeutic Association, Chicago, Sept. 15-17. Dr. Richard Kovacs, 223 East 68th Street, New York, Secretary.

American Public Health Association, St. Louis, Oct. 19-22. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

American Roentgen Ray Society, Washington, D. C., Sept. 22-25. Dr. Charles L. Martin, Baylor Hospital, Dallas, Texas, Secretary.

Association of Military Surgeons of the United States, New York, Oct. 8-10. Col. J. R. Kean, U. S. A. Ret., Army Medical Museum, Washington, D. C., Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 29-Oct. 1. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.

Delaware State Medical Society, Wilmington, Oct. 13-14. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Idaho State Medical Association, Pocatello, Sept. 3-5. Dr. J. N. Davis, Kimberly, Secretary.

Indiana State Medical Association, Marion, Sept. 23-25. Mr. T. A. Hendricks, Hume Mansur Building, Indianapolis, Executive Secretary.

Kansas City Clinical Society, Kansas City, Mo., Oct. 5-9. Dr. James R. McVay, Rialto Building, Kansas City, Mo., Secretary.

Kentucky State Medical Association, Owensboro, Oct. 5-9. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Muskegon, Sept. 8-10. Dr. F. C. Warnshuis, Powers Theatre Building, Grand Rapids, Secretary.

Mississippi Valley Conference on Tuberculosis, Lansing, Mich., Sept. 15-17. Dr. T. J. Werle, 209 W. Shiawassee Street, Lansing, Mich., Executive Secretary.

Missouri Valley, Medical Society of the, St. Joseph, Sept. 30-Oct. 2. Dr. Charles Wood Fassett, 115 East 31st Street, Kansas City, Mo., Secretary.

Nevada State Medical Association, Elko, Sept. 4-6. Dr. C. E. Piersall, 17 N. Virginia Street, Reno, Secretary.

Oregon State Medical Society, Medford, Sept. 2-4. Dr. C. L. Booth, 1021 Selling Bldg., Portland, Secretary.

Pennsylvania, Medical Society of the State of, Harrisburg, Oct. 5-8. Dr. Walter F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Utah State Medical Association, Salt Lake City, Sept. 7-12. Dr. William L. Rich, Boston Building, Salt Lake City, Secretary.

Vermont State Medical Society, St. Johnsbury, Oct. 15-16. Dr. William G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Richmond, Oct. 13-16. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Washington State Medical Association, Seattle, Sept. 17-19. Dr. C. H. Thomson, Cobb Building, Seattle, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 16-18. Mr. J. G. Crownhart, 558 Jefferson Street, Milwaukee, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

29: 581-728 (May) 1925

*Parenchymatous Nephritis. I. General Systemic Disorder. S. W. Clausen, St. Louis.—p. 581.
*Parenchymatous Nephritis. II. Infection of Paranasal Sinuses as Etiology. S. W. Clausen, St. Louis.—p. 587.
*Parenchymatous Nephritis. III. Surface Tension of Blood Serum. S. W. Clausen, St. Louis.—p. 594.
*Craniotabes and Rickets. S. J. Wilson and M. Seldowitz, Brooklyn.—p. 603.
Distribution of Inorganic Phosphorus in Blood of New-Born. E. A. Riesenfeld, A. R. Rose and I. Handleman, New York.—p. 611.
Magnoscope; Electrical Stethoscope. A. Sato and H. Nukiyama, Sendai, Japan.—p. 618.
Infection with Plaut-Vincent's Fusospirillar Organisms. Lung Abscess Cured by Neo-Arsphenamin. R. A. Spano, Buffalo.—p. 621.
*Lymphatic Leukemia with Leukopenia in Young Children. A. H. Washburn, Boston.—p. 631.
*Kidney. Filter for Bacteria. III. Rôle of Technic on Apparent Excretion of Bacteria by Kidney. H. F. Helmholz and R. S. Field, Rochester, Minn.—p. 641.
*Id. IV. Effect of Clamping Renal Artery or Renal Vein on Passage of Bacteria into Urine. H. F. Helmholz and R. S. Field, Rochester, Minn.—p. 645.
Recent Work in Anatomy, Physiology and Pathology of Infancy and Childhood. J. B. Holmes, Baltimore.—p. 650.

Parenchymatous Nephritis; Systemic Disorder.—One hundred and twenty-five cases are analyzed by Clausen. Twenty-three were of the parenchymatous type and 102 of the hemorrhagic type. The mortality was ten and nineteen, respectively. Clausen concludes that parenchymatous nephritis is a form of nephritis distinct from the hemorrhagic. It is caused by focal infections with staphylococcus. It consists in a widespread systemic disorder, characterized by susceptibility to infection and by loss of body protein. The necessary therapy of parenchymatous nephritis includes (*a*) treatment of focal infection, and (*b*) high protein, high caloric diet.

Nasal Sinusitis as Cause of Parenchymatous Nephritis.—In a series of eleven cases of parenchymatous nephritis occurring in a period of three years, nasal sinusitis was invariably present. Evidence is presented by Clausen that the sinus infection is an important factor in the causation of this disease.

Surface Tension of Blood Serum in Nephritis.—In glomerular nephritis Clausen found the surface tension to be slightly increased. In cardiac edema, the serum surface tension is not decreased. In parenchymatous nephritis, the surface tension is much diminished. As the surface tension returns to normal, albuminuria diminishes. Edema in parenchymatous nephritis is correlated with low serum protein. Incomplete correlation exists between low serum surface tension and low serum protein in a variety of conditions.

Craniotabes and Rickets.—One hundred and sixty-four cases of craniotabes were studied by Wilson and Seldowitz. The association of craniotabes to rickets was found to be inconsistent, and inference was made that this association is only a coincidence. The age incidence of craniotabes was found to be earlier than that of rickets. Season was found to have a definite influence on the occurrence of craniotabes, the greatest number of cases appearing in May, June and July, and a lesser number of cases at the end of the summer. Exposure to sunlight had a marked beneficial effect on craniotabes. In 42 per cent. of cases the areas calcified at the end of the first month, and in 91 per cent. at the end of the third month. Season had a definite influence on the disappearance of craniotabes, 93 per cent. of the patients being cured in August and September, irrespective of the kind of therapeutic agent employed. Season, rather than age, is suggested as the main factor in the disappearance of craniotabes.

Lymphatic Leukemia in Children.—Two cases of lymphatic leukemia are reported by Washburn which presented certain unusual features. The course in each case was unusually chronic. The first patient also showed two definite remissions, while under observation. The blood, in both patients, was characterized by a persistent leukopenia, with many atypical cells in the blood smears. The diagnosis was supported in the first patient by the necropsy findings and in the second by the biopsy report. Attention is called to the importance of frequent and thorough studies of the blood. These two patients were aged 2 and 4 years, respectively. The duration of the disease was three months in both cases. Treatment had no effect on the course of the disease.

Kidney: Filter for Bacteria.—According to Helmholz and Field, technic plays an important rôle in the determination of the excretion of bacteria by the kidney. Urine obtained by the use of the catheter contains bacteria in almost 50 per cent. of the instances. Even with this possible error in technic, bacteria do not constantly appear in the urine with marked diuresis.

Effect of Vascular Obstruction on Kidney as Filter for Bacteria.—Helmholz and Field assert that the renal filter remains intact for periods of one hour and even longer, when the renal artery has been clamped for periods up to one hour. Clamping the renal vein for three minutes damaged the renal filter so that the bacteria passed through in forty minutes. In only four of sixteen experiments in which the renal vein was clamped for periods up to one hour were bacteria cultured from the urine.

American Review of Tuberculosis, Baltimore

11: 375-470 (July) 1925

*Tuberculosis in Infancy and Childhood. I. Relation of Exposure to Infection. J. A. Myers and E. Magiera, Minneapolis.—p. 375.
*Id. II. Detection of Primary Lesion in Children. J. A. Myers and E. O. Lodmell, Minneapolis.—p. 386.
*Id. III. Influence of Chronic Pulmonary Lesions. C. O. Rollie and J. A. Myers, Minneapolis.—p. 393.
*Id. IV. Incidence of Pleurisy. J. A. Myers and C. O. Rollie, Minneapolis.—p. 398.
*Id. V. Relation of Tuberculosis Infection to Calcification of Hilum Lymph Nodes of Lung. J. A. Myers and K. Tsiang, Minneapolis.—p. 403.
*Id. VI. D'Espine's Sign and Stereoscopic Roentgenograms in Detection of Enlarged Hilum Lymph Nodes. J. Tsiang and J. A. Myers, Minneapolis.—p. 407.
*Pulmonary Tuberculosis in Pregnant Women Terminating in Spontaneous Pneumothorax Shortly Before Labor. J. I. Dubrow, Denver.—p. 413.
*Studies on Tuberculosis Infection. X. Early Dissemination of Tubercle Bacilli After Intracutaneous Inoculation of Guinea-Pigs of First Infection. H. S. Willis, Baltimore.—p. 427.
*Id. XI. Early Dissemination of Tubercle Bacilli After Intracutaneous Inoculation of Immune Guinea-Pigs of Reinfection. H. S. Willis, Baltimore.—p. 439.
*Production of Acid-Fastness in Nonacid-Fast Bacilli. L. K. Campbell, Chicago.—p. 450.
*Amino-Acid Content of Tubercle Bacillus. L. K. Campbell, Chicago.—p. 452.
Alanin and Histidin Metabolism of Tubercle Bacillus. L. K. Campbell, Chicago.—p. 458.

Relation of Exposure to Infection in Tuberculosis.—It is obvious, from the study made by Myers and Magiera that the incidence of tuberculous infection is high among children with histories of exposure. Pirquet tests were positive in 435 of 761 cases with definite histories of exposure, in 224 of 784 cases with no histories, and in 174 of 455 cases with questionable histories of exposure.

Primary Tuberculosis Lesion in Children.—Since approximately 45 per cent. of the 1,412 cases analyzed by Myers and Lodmell reacted positively to the Pirquet test and only 232 presented roentgen-ray evidence of primary foci in the lung parenchyma, it would appear that many primary foci develop elsewhere. In many cases with positive Pirquet reactions and no roentgen-ray evidence of primary foci in the lungs, there was definite roentgen-ray evidence of hilum node enlargement.

Incidence of Chronic Pulmonary Tuberculosis.—Among 2,000 children examined by Rollie and Myers in the outpatient department of a school for tuberculous children there were thirty who showed definite evidence of pulmonary involvement. Of these, six were due to pneumonia. The remaining

twenty-four cases were considered tuberculous although tubercle bacilli were not demonstrated in all cases.

Incidence of Pleurisy in Pulmonary Tuberculosis.—Among the 2,000 children examined by Myers and Rollie 125 children gave histories of pleurisy. There were only seventeen in whom definite evidence of old pleurisy could be elicited by the physical or roentgen-ray examination. There were twenty-four children with evidence of pleurisy who gave definite histories of exposure, while in the remainder there was only questionable or no history of exposure. Among the entire group of pleurisy cases there were thirty-four who reacted positively to the Pirquet test.

Relation of Pulmonary Tuberculosis to Calcification of Hilum Lymph Nodes.—Among 1,412 cases examined by Myers and Tsiang there were 1,024 cases with findings which the roentgenologists interpreted as areas of calcification in the hilum lymph nodes. Of these 1,024 cases, 70 per cent. presented evidence of only slight calcification, 29 per cent. presented evidence of a moderate amount of calcification, while only 1 per cent. showed evidence of marked calcification. Of the total number showing evidence of calcification of the hilum nodes, 45 per cent. reacted positively to the Pirquet test. When grouped according to the amount of calcification present, it was found that 43 per cent. of those with slight calcification, 53 per cent. of those with moderate calcification, and 54 per cent. of those with marked calcification reacted positively to the Pirquet test.

Diagnostic Value of D'Espine's Sign.—Of 1,057 children examined by Tsiang and Myers 311 showed the presence of D'Espine's sign, 211 of which presented roentgen-ray evidence of hilum node enlargement or calcification or both. The remaining 100 with D'Espine's sign present showed no evidence of hilum node enlargement or calcification by roentgen-ray examination. The remaining 746 children in the group presented roentgen-ray evidence of slight or moderate enlargement or calcification or both of the hilum nodes but D'Espine's sign was absent.

Pulmonary Tuberculosis in Pregnant Woman Terminating in Spontaneous Pneumothorax.—The case reported by Dubrow was a young primipara with advanced pulmonary tuberculosis in whom spontaneous pneumothorax developed on the day of the onset of labor. Permission to interrupt pregnancy during the early months had been denied, and the onset of labor shortly after development of a valvular spontaneous pneumothorax determined the immediate course, in spite of the distressing and dangerous symptoms. A practically normal labor resulted and a healthy child was born, which subsequently showed no signs of tuberculosis. The child was not nursed by the mother and developed normally. The mother succumbed fifteen days after delivery; not, however, from the tuberculosis or the complicating spontaneous pneumothorax, but as the result of renal incompetence which became evident eight days after delivery.

Dissemination of Tubercle Bacilli.—Animal experiments have shown Willis that tubercle bacilli are disseminated rapidly from a point of inoculation in the skin of normal guinea-pigs. Migration of bacilli from the site of inoculation is often accomplished within the first hour after their introduction, and some bacilli have always migrated from the area by three hours after inoculation. Bacilli always spread from a point in the skin of the side to the axillary and inguinal lymph nodes within twenty-four hours of their inoculation. This is a distance of about 5 cm.

Dissemination of Tubercle Bacilli.—In marked contrast to the rapid dissemination of tubercle bacilli from a point of inoculation in the skin of normal guinea-pigs of first infection, Willis says, dissemination of bacilli is materially retarded in the skin of guinea-pigs of reinfection, made allergic or immune by a previous infection with tubercle bacilli. In the normal animal transit from the site of inoculation in the skin to the axillary or inguinal lymph nodes, 4 or 5 cm. distant, requires twenty-four hours or less. In the immune animal such transit is accomplished in a little less than three weeks; longer than two weeks is always required. In the immune animal, a few of the bacilli introduced into the skin do ultimately reach remote parts of the body, but their numbers are relatively small, compared with the numbers that spread from the site of reinfection in the normal animal. The immune animal, therefore, appears definitely to fix bacilli at the point of introduction, for at least longer than four days after inoculation, and to prevent widespread or early dissemination. This finding is a further confirmation of the hypothesis that specific immunity to tuberculosis is accomplished, in part, through a fixation of bacilli to reinfection by the rapid inflammatory response of the allergic reaction.

Acid Fastness in Nonacid-Fast Bacilli.—The results of Bienstock and Hottstein could not be confirmed by Campbell. The nonacid-fast bacilli used by him were not rendered acid-fast by prolonged cultivation on solid mediums containing a lipoidal substance in suspension.

Amino-Acid Content of Tubercle Bacillus.—Campbell concludes that the protein of the tubercle bacillus is in some respects similar to the histones, all of which contain large quantities of arginin.

Annals of Surgery, Philadelphia

82: 1-192 (July) 1925

*Mechanism of Formations and Growth of Malignant Tumors. A. Carrel, New York.—p. 1.
*Transplantation of Distant Skin Flaps for Cure of Intractable Basal Cell Carcinoma. J. S. Horsley, Richmond, Va.—p. 14.
*Malignant Tumors of Thyroid; Epithelial Types. A. Graham, Cleveland.—p. 30.
*Tumors of Male Breast. K. Speed, Chicago.—p. 45.
*Bilateral Mammary Cancer Operations. C. A. McWilliams, New York.—p. 63.
*Pseudorecurrences After Radical Amputation of Breast for Carcinoma. A. V. Moschcocowitz, New York.—p. 81.
*Etiology of Cancer of Stomach. H. Cabot and G. C. Adie, Ann Arbor, Mich.—p. 86.
Papillomata of Large Bowel. V. C. David, Chicago.—p. 109.
Carcinoma of Body of Uterus. Fifty Cases. L. Davis, Boston.—p. 131.
*Metastatic Carcinoma in Ureter Associated with Ureteral Stricture. W. J. Carson, Baltimore.—p. 142.
*Primary Carcinoma of Duodenum. Fifteen Cases. G. B. Eusterman, D. M. Berkman and T. S. Swan, Rochester, Minn.—p. 153.
*Epitheliomas in Sebaceous Cysts. H. D. Caylor, Rochester, Minn.—p. 164.
Carcinoma of Rectum. J. A. Blake, New York.—p. 177.

Growth of Malignant Tumors.—Carrel presents certain facts that he has observed in studying normal and cancer tissues, and discusses their significance from both points of view—the formation of tumors and their growth.

Transplantation of Distant Skin Flaps in Operations for Carcinoma.—The striking thing emphasized by Horsley in citing ten cases is, that though there has been a recurrence in five, in no instance has the recurrence originated along the margin of or within the transplanted tissue when the flap was taken from a distance of an inch or more. Such instances as these, Horsley says, appear to indicate that flaps transplanted from a distance have a distinct inhibitory effect on basal cell cancer. Just how deep this inhibitory effect extends it is difficult to say—probably from an eighth to a fourth inch (0.3 to 0.6 cm.). This suggests a new principle for the treatment of intractable basal cell cancers that have not been cured by other measures.

Malignant Epithelial Tumors of Thyroid.—Graham claims no originality for the observation that carcinomas of the thyroid frequently invade the blood stream and metastasize by this route. He is unaware, however, that there has been a systematic attempt made to determine the incidence of invasion of the blood vessels in a series of cases, to recognize types of lesions, in which one may or may not expect to find invasion of the blood vessels as a means of differentiation of benign and malignant adenomata. The ultimate value of invasion of blood vessels as an indication of malignancy of thyroid epithelial tumors, and particularly its value as a means of distinguishing between benign and malignant adenoma, is a problem for the future, but on the basis of Graham's experience to date it seems worthy of considerable confidence.

Tumors of Male Breast.—According to Speed, the relative occurrence of tumors of the male breast is between 1 and 2 per cent. of all breast tumors. Male breast cancer progresses

slowly. Trauma, especially occupational trauma, seems to be an important etiologic factor. Direct involvement of fascia and muscle by microscopic lymphatic extension is very common. A radical operation for removal of malignant breast tumors is just as necessary in the male as in the female. The male offers probably a better prognosis and a longer life expectancy after radical removal of breast cancer than does the female. Five cases are reported.

Bilateral Mammary Cancer.—McWilliams reports on ninety-eight patients with bilateral mammary cancers, eleven of which were simultaneous, while eighty-seven were consecutive. The frequency of bilateral breast cancers (including both simultaneous and consecutive together) is 4.9 per cent. of all mammary cancers (in 3,132 breast cancers, the bilateral lesions occurred 154 times). Simultaneous bilateral cancers occur about once in 500 breast cancers, or 0.2 per cent., and consecutive bilateral cancers occur in 4.7 per cent. As a means of comparison, McWilliams has collected the results of 1,720 operations for unilateral breast cancers; of these, 31.6 per cent. of patients were alive five years after the single operation, while of the eighty-seven patients with consecutive bilateral cancer operations, forty-seven, or 54 per cent., were alive five years after the first operation, and twenty-one, or 24.1 per cent., were alive five years after the second operation. The data as to the ultimate outcomes following operations on these ninety-eight patients for bilateral mammary cancers seem to establish: First, that, compared with the ultimate results following operations for unilateral mammary cancer, the extreme pessimism current regarding the final results following operations for the bilateral lesions is not justified. Secondly, that the second breast cancer, in probably a large number of patients, is a primary growth, entirely independent of the first breast cancer.

Pseudorecurrences of Breast Cancer After Operation.—Three cases of pseudorecurrences after radical extirpation of the breast for cancer are reported by McWilliams. These pseudorecurrences simulate physically true recurrences. They possess the following characteristics: *(a)* they appear very soon after the operation; *(b)* they are situated within or very close to the cicatrix; *(c)* they are painless and hard, and *(d)* they do not increase in size. Microscopically they represent foreign body cysts, the foreign body being either a catgut ligature or a gauze thread.

Etiology of Cancer of Stomach.—A review of 116 consecutive cases of cancer of the stomach, with particular relation to etiology, is made by Cabot and Adie. In only nine of these cases was there a history of ulcer. The type of cancer is known in fifty-six cases. Of these, twenty-five were adenocarcinoma, nineteen were scirrhus carcinoma, seven were mucoid carcinoma, three were medullary carcinoma and two were colloid carcinoma. There are only fifty-six cases in which the whole region was at the disposal of the pathologist. In this group there are five cases in which there is clear evidence of both peptic ulcer and cancer. This would appear to require the admission that cancer is a definite result of ulcer in a certain proportion of cases.

Metastatic Carcinoma in Ureter.—Three cases of metastatic carcinoma in the ureter are reported by Carson. The seats of the primary tumor were: bladder, prostate and cervix uteri. In each case the cancer cells were found in the perivascular lymphatics of the ureter. Ureteral strictures, inflammatory in origin, were found in each case.

Primary Carcinoma of Duodenum.—Of fifteen cases of primary carcinoma of the duodenum reported by Eusterman et al. six were in the supra-ampullary portion, six in the ampullary, and three in the infra-ampullary portion. The onset of symptoms was fairly abrupt in 50 per cent. of the cases. Flatulency, pain or distress, the retention type of vomiting, dehydration and toxemia were the major symptoms. In most cases the course was rapidly progressive. Jaundice, except as a terminal symptom, was rare, even in the ampullary group. Tumor was found in five (33.33 per cent.), and it was present only in supra-ampullary and ampullary portions. In twelve of the fifteen cases in which gastric analysis was made, seven had free hydrochloric acid in subnormal amount; five had achlorhydria. Gross gastric retention was present in all except one. In the infra-ampullary group excess fluid containing bile and pancreatic juice was noted. A dilated stomach with considerable barium residue without a demonstrable gastric lesion was the usual roentgen-ray finding. The toxemia of high intestinal obstruction is a serious complication and invariably was present in these cases. Diagnosis and treatment are discussed.

Epithelioma of Sebaceous Cysts.—Caylor urges that all sebaceous cysts be removed, for they may become the site of malignant tumor. Approximately 3.44 per cent. of the sebaceous cysts in his series eventually became malignant. The lesion should be excised if it is ulcerated, and excision is imperative if the lesion recurs. Heredity was apparently an etiologic factor in the development of epitheliomas in the cysts studied, since 58.33 per cent. of the patients with epitheliomas gave a family history of malignancy, while only 13.83 per cent. of the patients with simple uncomplicated sebaceous cysts gave a personal or family history of malignancy. Local irritation, while it may be an item in causing the development of malignant change, was not the most important factor.

Johns Hopkins Hospital Bulletin, Baltimore

37: 1-74 (July) 1925

*Experimental Hypophysectomy. I. Effect on Maintenance of Life. W. E. Dandy and F. L. Reichert, Baltimore.—p. 1.
*Normal Rhythm of White Blood Cells. F. R. Sabin, R. S. Cunningham, C. A. Doan and J. A. Kindwall, Baltimore.—p. 14.

Experimental Hypophysectomy.—Dandy and Reichert found no evidence to support, and every evidence to refute, the assumption that the hypophysis is essential to life, or that the group of symptoms which have been described by others as preceding death in hypophysectomized animals are of hypophyseal origin.

Normal Rhythm of Leukocytes.—Sabin and her associates have determined that there is a characteristic rhythm of the total white blood cells with an interval of approximately an hour's duration. The total number of these cells varies in the proportion of 1 to 2. The total number is increased in the afternoon regardless of whether food has been taken or not, and this entire increase is the result of an increase in the number of the neutrophilic leukocytes. The neutrophilic leukocytes die out in showers, often of considerable proportions. These dead cells are promptly replaced, though whether from some reservoir or directly from the bone marrow, the authors have not yet determined. The lymphocytes have a shorter rhythm than the leukocytes, but their total number varies in the proportion of 1 to 3, in contrast to the variation of 1 to 2 for the leukocytes. A small proportion of the monocytes are normally undergoing division in the circulating blood. In five out of six apparently normal persons, small percentages of myelocytes were found in the circulating blood.

Journal of Industrial Hygiene, Baltimore

7: 293-344 (July) 1925

*Acute Dermatitis Among Painters Employed in Industrial Plant. J. A. Turner, Cincinnati.—p. 293.
Forty-Two Occupational Disease Hazards in Tanning Industry. D. K. Minister, Cincinnati.—p. 299.
*Size-Frequency and Identification of Certain Phagocytosed Dusts. P. Drinker, Boston.—p. 305.
Effect of Atmospheric Conditions on Health and Efficiency (Cotton Industry). S. Wyatt, London.—p. 317.

Paint Solvents Cause Dermatitis.—Turner emphasizes the fact that paint solvents are capable of producing a dermatitis unless proper care is used in removing them from the skin. This can best be accomplished by the use of soap and water and then thoroughly rinsing with clear warm water and seeing that the skin is dried. The solvents turpentine, paint-thinner and naphtha, appear to be the chief offenders in producing the dermatitis in the group of cases presented in this report. The eruption appeared only on the hands and forearms, as they were the only parts exposed. The eruption is characterized chiefly by a dry skin. Within twenty-four hours after exposure many small blisters are formed containing a clear serous fluid. There is a marked tendency for these blisters to coalesce and form very large ones. When the blister is

broken, an inflamed base is left from which exudes a serous fluid. The predominant symptoms complained of are burning and itching. Healing is attended with an appreciable amount of desquamation. A 1:1,000 solution of potassium permanganate, applied daily to the eruption, gives immediate relief from the burning and itching and at the same time promotes healing.

Dust Distribution in Lungs.—From the size measurement of phagocytosed dusts and their approximate frequency of occurrence in endothelial cells from sputum of men exposed to dusty air, an attempt is made by Drinker to predict the relative power of certain dust particles to produce pneumonokoniosis. From a comparison of dust inhaled, as sampled by electric precipitator, and dust in the cells from human sputum, selective phagocytosis is indicated. Photomicrographs of the dust cells and the size-frequency curve of the phagocytosed particles are given, with details of the method used in measuring the particles and determining their size-frequency distribution.

Journal of Infectious Diseases, Chicago

37: 1-95 (July) 1925

*Green Coloration by Certain Streptococci on Blood Agar. W. A. Hagan, Ithaca, N. Y.—p. 1.
*Relationship of Hard Water to Health. II. Effect on Growth, Appearance and Well Being. J. T. Myers, Omaha.—p. 13.
*Proliferative Reaction to Stimuli by Lytic Principle (Bacteriophage) and Its Significance. P. Hadley, Ann Arbor, Mich.—p. 35.
*Antigenic Properties of Tissue Fibrinogen. C. M. Downs, Lawrence, Kan.—p. 49.
*Study of Yeasts from Human Sources. J. F. Peckham, Providence, R. I. —p. 52.
Use of Rabbits in Study of Infectious Abortion. B. L. Warwick, E. M. Gildow and F. B. Hadley, Madison, Wis.—p. 62.
Mixed Infection in Guinea-Pigs with Bacterium Abortum and Mycobacterium Tuberculosis. A. F. Schoenfeld and C. M. Carpenter, Ithaca, N. Y.—p. 68.
Form and Growth of Cholera Vibrio. A. R. Henrici, Minneapolis.—p. 75.
*Formation of Antibodies to Sheep Blood in Experimental Tuberculosis of Rabbits. L. Hektoen, Chicago, and H. J. Corper, Denver.—p. 82.
Bacterial Factors in Pyorrhea Alveolaris. III. Isolation of B. Tetani, B. Welchii and Other Sporulating Anaerobes from Human Saliva. I. C. Hall, Ithaca, N. Y.—p. 87.
Precipitin Production Through Lens Injury. M. F. Guyer, Madison, Wis.—p. 93.

Cause of Green Coloration of Streptococci in Culture.—The explanation given by Hagan for the formation of a green discoloration about the colonies of certain streptococci, and presumably of other green-forming bacteria when growing on blood agar, is that it is due to the action on the blood corpuscles of peroxid and acid, substances which are produced simultaneously by these organisms when in the period of active multiplication. The hemolysis which occurs about the periphery of the green zone when the period of incubation is prolonged, or when the plate culture is refrigerated while yet in an actively growing condition, is probably due to diffusing acid. Peroxid and acid have an antagonistic action on blood corpuscles, peroxid tending to discolor and protect them from hemolysis by the acid. Hemolysis results, therefore, only when peroxid production diminishes or ceases.

Relationship of Hard Water to Health.—The result of Myers' experiments on the relationship between natural hard water and the growth of animals was virtually nil. In no instance did animals on distilled water develop better than those on hard water. The reverse was true under several conditions.

Proliferative Reaction to Bacteriophage to Stimuli.—Hadley points out that abnormally rapid growth (proliferation) is frequently observed in bacterial colonies under the influence of the lytic agent. Moreover, although such proliferations may be regarded as analogous to those seen in the tissues of plants and animals experiencing an infection with an ultravirus; similar proliferation may also result from mechanical and chemical stimuli. The observations reported, therefore, while in harmony with d'Herelle's conception of the bacteriophage as an ultravirus, cannot serve as proof of this view. The observations reported are also used as the point of departure for formulating certain modifications in d'Herelle's view which would make possible a correlation between his cases and a class of instances at present excluded by him from what he regards as the legitimate field of lytic action. It is concluded that the phenomenon of transmissible bacterial autolysis is widespread in the bacterial world; and that, although d'Herelle's hypothesis offers the easiest and most obvious explanation of the problem, we should not yet close our eyes to other possible avenues of approach.

Antigenic Properties of Tissue Fibrinogen.—Downs asserts that a protein which is an active blood coagulant and which has antigenic properties distinct from the serum antigens can be precipitated from lung extracts. Proteins that are chemically and antigenically identical with the lung protein can be isolated from liver and kidney extracts. These proteins show species specificity in their antigenic properties but not in their action in blood clotting.

Yeasts from Human Sources.—Fifty-one cultures of yeasts from throat infections, bronchitis, stomatitis and vaginitis were identified by Peckham. Forty-one of the cultures were pathogenic, producing abscesses in guinea-pigs; ten were nonpathogenic. One of the pathogenic yeasts, isolated from a throat culture and injected into animals, caused a lymphopenia; induced the formation of antibodies; was toxic in systemic effect and produced localized lesions which are characterized by necrosis, by an infiltration of endothelial cells which fuse to form giant cells, and by a proliferation of fibroblastic tissue so marked in the pancreas that the islands of Langerhans may be obliterated and a consequent glycosuria develop. From the effect of yeast on the blood and tissues of animals, it seems possible that they may become additional etiologic factors in infections caused primarily by other organisms.

Formation of Antibodies in Tuberculosis.—The effect of various types of tuberculosis in the rabbit on the formation of antibodies was investigated by Hektoen and Corper. A rapidly fatal general tuberculosis in the rabbit from the intravenous injection of virulent bovine tubercle bacilli was without definite effect on the agglutinin and lysin content of the serum even to within a few days of death, while precipitin formation seemed to be slightly retarded. Local subcutaneous tuberculosis in rabbits produced by the injection of avirulent human tubercle bacilli ten and twenty-six days before the intraperitoneal injection of sheep blood had no appreciable effect on lysin or precipitin formation, but two of the rabbits given sheep blood forty-three days after infection maintained high specific lysin and precipitin titers for 445 days respectively. Whether the tuberculosis was the cause of the unusual reaction of these two rabbits has not been determined. Rabbits infected subcutaneously with avirulent human tubercle bacilli and given sheep blood intravenously at different intervals after infection revealed slight variations in antibody formation from the usual course. Therefore it is evident that tuberculosis in the rabbit, either general or local, apparently has no marked influence on the antibodies that develop from the injection of sheep blood. In exceptional cases, it may result in a prolongation of antibody accumulation in the blood.

Missouri State Medical Association Journal, St. Louis

22: 241-292 (July) 1925

Medical Education, Medical Legislation and Medical Distribution. W. A. Clark, Jefferson City.—p. 241.
Cataract Extraction with Round Pupil. E. S. Connell, Kansas City.—p. 247.
*Pericolic Adhesions as Factor in Diagnosis of Chronic Appendicitis and Failure to Obtain Relief by Removal of Appendix. C. H. Shutt, St. Louis.—p. 249.
*Treatment of Tetanus. J. L. Ferris and A. L. Fuerth, Cape Girardeau. —p. 253.

Pericolic Adhesions in Appendicitis.—Shutt advises that no case of chronic appendicitis should be operated without careful and, if possible, repeated examination. Pericolic adhesions form a definite pathologic entity. They should be considered in all chronic conditions about the appendix and should be searched for in all operations for chronic appendicitis. Pericolic adhesions frequently exist without any trouble with the appendix and if not relieved removal of the appendix affords no relief for the patient. Pericolic adhesion cases make good recoveries when properly operated and managed during the period of operative convalescence.

Treatment of Tetanus.—An experience with seventy-one cases of tetanus has convinced Ferris and Fuerth that antitoxin in prophylactic doses is a specific in the prevention of tetanus. One thousand five hundred units of antitetanic serum should be given to all patients who have suffered lacerated or penetrating wounds. The dose should be repeated in ten days if the wound contains any necrotic material and again before any operative procedure. All wounds should be treated surgically; the injured or necrotic tissue should be excised and treated with 3 per cent. tincture of iodin. The mortality can be lowered by the routine use of large doses of antitetanic serum. When the disease has developed, an attempt should be made to saturate the patient with antitoxin before fixation of toxin has occurred in the nerve cells of the spinal cord. This is done by giving antitetanic serum intraspinally, intravenously, intramuscularly, subcutaneously and around the wound. Fifty thousand units should be given in the first twenty-four hours, increasing the dose by one-half daily until the patient is improved or dead.

Southern Medical Journal, Birmingham, Ala.

27: 491-562 (July) 1925

Essential Unity of Wassermann and Precipitation Tests. A. D. Dulaney, Columbia, Mo.—p. 491.
*Thymus in Infants. W. A. Mulherin, L. P. Holmes and H. P. Harrell, Augusta, Ga.—p. 494.
*Diathermy and Treatment of Pneumonia. G. F. Walsh, Fairfield, Ala.—p. 500.
Diverticulosis of Colon. H. P. Conley, Memphis, Tenn.—p. 503.
*Roentgenotherapy in Hyperthyroidism. J. W. Landham, Atlanta, Ga.—p. 506.
Hodgkin's Disease of Skin. B. Shelmire, Dallas, Texas.—p. 511.
Treatment of Pityriasis Rosea with Ultraviolet Light. J. C. Michael, Houston, Texas.—p. 519.
Development and Results of State-Wide Laboratory Service. L. C. Havens, Montgomery, Ala.—p. 521.
Causes of Death in Cholecystitis. W. A. Bryan, Nashville, Tenn.—p. 524.
Congenital Pyloric Stenosis. R. Hill, St. Louis.—p. 529.
*Blood Transfusions in Urology. M. L. Boyd, Atlanta, Ga.—p. 532.
*Cesarean Section in Eclampsia. H. R. Shands, Jackson, Miss.—p. 534.
Indications for Cesarean Section. W. R. Cooke, Galveston, Texas.—p. 538.
Conservative Treatment of Eclampsia. P. W. Toombs, Memphis, Tenn.—p. 541.
Value of Roentgenography to Otolaryngologist. E. A. Looper, Baltimore.—p. 550.
Combined Tonsil and Nasal Submucous Resection. J. B. Farrior, Tampa, Fla.—p. 554.

Size of Thymus.—A preliminary report is given by Mulherin, Holmes and Harrell of the thymus in 111 infants, eighty in the first week of life and thirty-one from 2 weeks to 2 years old. The lateral measurement of 3 cm. in the second intercostal space was taken as a working basis to represent the borderline between a normal and an enlarged thymus. The average lateral measurement of the thymus in the series was 2.96 cm. The incidence of clinically positive cases was 8.10 per cent.; potential cases 21.26 per cent.; normal cases, 70.27 per cent. Position of the diaphragm did not appear to make a material difference in the proper interpretation of thymic shadows for diagnostic purposes. The authors recommend, in making thymic radiograms in infancy, that the baby be made to cry, thereby uniformly securing forced expiration when taking the picture.

Diathermy in Pneumonia.—Walsh does not claim that diathermy reduces the death rate in pneumonia but if only on account of the symptomatic relief, it deserves a fair and impartial trial.

Roentgenotherapy in Hyperthyroidism.—Since there is a great percentage of cures accomplished by radiotherapy without mortality or bad cosmetic results, as is obtained by surgery, it is apparent to Landham that roentgen-ray treatment should be the method of choice.

Blood Transfusion in Urology.—In sixteen cases in which he has employed transfusions, the results have been so excellent that Boyd is an ardent advocate of their use not alone for the emergency where a life may be saved, but also for the purpose of stopping hemorrhage, preparing patients for operation, and for overcoming shock and prostration after operation.

Cesarean Section in Eclampsia.—Unless the eclamptic mother is fortunate enough to fall into the hands of a Stroganoff or a Tweedy, Shands feels that the chance for her life and her baby's will most probably be better if her surgeon or obstetrician uses the radical rather than the conservative method of treatment, provided, of course, that her attendant is a competent abdominal surgeon.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 97-152 (July 18) 1925

Overgrowth of Specialism. J. B. Hall.—p. 97.
Some Medical Aspects of Holidays. H. Rolleston.—p. 100.
Psychology of Animals Swallowed Alive. J. Bland-Sutton.—p. 104.
*Difficulties in Diagnosis of Leukemia. G. L. Gulland.—p. 108.
Site of Association's New House. E. M. Little.—p. 111.

Diagnosis of Leukemia.—Gulland regards leukemia as a sarcoma of the leukocytes. He asserts that until further research throws fresh light on the disease, the neoplastic theory of its causation is the most logical and satisfying explanation.

Calcutta Medical Journal

20: 415-460 (May) 1925

Blood Chemistry of Bengalee Students. Physiologic Normals. I. H. N. Mukherjee and J. C. Saha.—p. 415.
Plea for Immunotherapy in Kala-Azar. S. L. Rodrigues.—p. 421.
"Ecthyma" as Menace Against Smallpox Vaccination. A. Gupta.—p. 432.
Catheterization of Eustachian Tube. K. M. Sinh.—p. 435.

Journal of Neurology and Psychopathology, London

6: 1-90 (May) 1925

Experimental Anatomic Investigations Concerning Projections of Retina on Primary Optic Centers in Apes. B. Brouwer and W. P. C. Zeeman.—p. 1.
Does Autonomous Meningococcal Meningitis Exist and Can It Be Influenced By Serum Acting Locally? K. Lewkowicz.—p. 11.
Psychopathology of Lying. I. M. Altshuler.—p. 20.
Colloidal Benzoin Curve in Cerebrospinal Fluid. W. W. Payne.—p. 27.
Physiology of Brain Surgery. C. E. Reynolds.—p. 35.
Case of Bilateral Cortical Blindness. I. G. H. Wilson.—p. 42.

Journal of Pathology and Bacteriology, Edinburgh

28: 397-539 (July) 1925

*Action of Sensitized Antigen in Production of Specific and Isophile Hemolytic Immune Body. T. Iijima.—p. 397.
*Nature of Acquired Resistance to Bacteriophage Action. E. M. Burnet.—p. 407.
Conditions Governing Appearance of Tâches Vièrges in Bacteriophage Activity. F. M. Burnet.—p. 419.
Experimental Pneumococcal Infections of Lung. J. F. Gaskell.—p. 427.
*Thyroid in Experimental Tuberculosis. S. R. Gloyne.—p. 451.
*Epidemic Encephalitis in Rabbits. J. H. Dibble.—p. 457.
Immunologic Notes. VIII-XVI. A. T. Glenny, C. G. Pope, H. Waddington and U. Wallace.—p. 463.
Excretion of Water, Urea and Chlorids in Experimental Oxalate Nephritis. J. S. Dunn and N. A. Jones.—p. 483.
Relief of Experimental Arterial Anoxemia by Compressed Air. C. F. Nelson and P. Woodward.—p. 507.
Preparations of Certain Substituted Ureas and Their Use in Treatment of Trypanosomiasis. T. H. Fairbrother, F. A. Mason, W. H. Perkin and A. Renshaw.—p. 514.
Improved Method of Mounting Pathologic Specimens. C. M. Acland.—p. 523.
Temperature of White and Black and White Rats. C. Price-Jones.—p. 525.
Sarcoma of Ampulla of Vater, Without Jaundice, Leading to Acute Pancreatitis. H. H. Moll.—p. 528.

Sensitized Antigen.—The data given by Iijima are interpreted as proving that the sensitization of antigen leads to a neutralization of antigenic power, since the amount of immune body produced as the result of injecting fully sensitized antigen into animals is, in general, infinitesimally small as compared with that in control tests. A slight temporary increase of immune body which occurs soon after injecting the sensitized antigen is to be accounted for by a dissociation from the receptors of the injected antibody.

Resistance to Bacteriophage Activity.—Burnet asserts that on the basis of his observations Seiffert's "catalyst" theory of bacteriophage activity is modified to bring the phenomena of normal bacterial fission and of transmissible lysis into close dependence.

Thyroid in Experimental Tuberculosis.—In man the thyroid gland is only rarely affected with tuberculosis. Similarly, in the highly susceptible guinea-pig, experimentally infected with *B. tuberculosis*, tuberculous lesions of the thyroid are apparently not common. Lesions are fairly common in rabbits. But Gloyne's experiments show that thyroid gland substance of various animals has no bactericidal effect on the tubercle bacillus in vitro. Thyroid administered to experimentally infected guinea-pigs and rabbits over a course of several weeks does not arrest the disease. There appears to be little evidence for supposing that the thyroid itself has any direct antitoxic action in tuberculosis.

Experimental Epidemic Encephalitis.—Material from the central nervous system of ten cases of epidemic encephalitis was inoculated by Dibble into rabbits with negative results.

Kitasato Archives of Experimental Medicine, Tokyo

6: 199-300 (June) 1925

*Cultivation of Causative Agent of Typhus Fever. S. Kusama, S. Yoskioka and K. Ando.—p. 199.
Trombiculae, Carriers of Pseudotyphus and Related Species from Sumatra. E. W. Walch.—p. 235.
*Alkaloids of Coeculus Diversifolius D. C.; I; Kukolin. K. Ohta.—p. 259.
*Id. II. Diversin. K. Ohta.—p. 283.

Causative Agent of Typhus.—Kusama and his associates obtained pure cultures of two stains of identical new specimens of a micro-organism by the ascites broth cultivation of pieces of the kidney of the Japanese monkey, which had been infected by the inoculation of two strains or passage viruses of typhus fever. This recovered micro-organism caused a febrile attack in the Japanese monkey like that caused by the passage virus, and the anatomic and histologic changes were also identical. Moreover, the animal, which had tolerated the febrile attack by the recovered micro-organism, acquired an immunity against the passage virus of typhus fever, and vice versa. From their experimental data the authors believe that this micro-organism is the germ of typhus fever.

Kukolin.—Ohta found that *Cocculus diversifolius* D. C. contains a new alkaloid, kukolin, which increases reflexes, contracts the pupils, hastens respiration, initiates cramps with eventual paralysis by central action. The heart muscle, intestine, uterus, in fact, all muscles are paralyzed, although in varying degrees. Kukolin is not especially hemolytic or trypanocidal.

Diversin.—Diversin increases reflex irritability, paralyzes the heart muscle directly, contracts peripheral vessels although large doses cause dilatation; reduces intestinal tonus; in small doses it excites uterine activity; large doses paralyze this muscle.

Lancet, London

2: 109-162 (July 18) 1925

*Etiology of Malignant New Growths. W. E. Gye.—p. 109.
*Microscopic Examination of Filtrable Viruses. J. E. Barnard.—p. 117.
Foundations of Vision. J. H. Parsons.—p. 123.
*Nasal Sinuses as Route of Infection in Lethargic Encephalitis. A. L. Yates and S. Barnes.—p. 130.
Bilateral Prepatellar Bursæ. A. Trevor Jones.—p. 132.

Etiology of Malignant New Growths.—Researches made on the origin of cancer lead Gye to regard cancer—using the term in its widest sense—as a specific disease caused by a virus (or growth of viruses). Under experimental conditions the virus alone is ineffective; a second specific factor, obtained from tumor extracts, ruptures the cell defences and enables the virus to infect. Under natural conditions, continued "irritation" of tissues sets up a state under which infection can occur. The connection between the specific factor of a tumor and an irritant remains to be investigated. Some of the relatively unimportant "irritants" are known, such as coal tar, paraffin oils, etc. The virus probably lives and multiplies in the cell and provokes the cell to continued multiplication.

Nature of Filtrable Viruses.—Barnard reviews previous work done on the microscopic study of filtrable viruses and describes his own work, especially on malignant tumors. He has seen particulate forms develop into spheroids and then the full life cycle ensues. His explanation of the life cycle is that the spheroids take the place of the living cell in providing conditions suitable for reproduction. In very young colonies of pleuropneumonia the particulate forms do apparently divide for the first few hours only, and are then immersed in some excretory material which reduces the r surface tension. Soon, however, the spheroids develop on the outer edge of the colony and further reprodution takes place on those. A long series of comparative observations on cultures, all of which have ultimately been proved by animal experiments to be infective, has led to the conclusion that the same type of phenomenon, but on a smaller scale, is to be observed in the Rous fowl sarcoma, mouse sarcome 37/S and latterly in human carcinoma, as can be seen in cultures of pleuropneumonia. In no essential point is there any difference, except that the cultures from malignant growths are slower in developing and do not produce such rich cultures. If the spheroids are an essential part of the life-history of these organisms then, owing to their low refractive index, they would produce evident cloudiness. The fluid cultures from malignant growths always remain clear; on solid mediums the colonies are so small that they required the use of a high-power objective to see them. The incubation period has not usually exceeded seven days, and examination of the cultures and similarly incubated uninoculated tubes has been made from three days onward. During that period the same life cycle has been observed in all cases as that seen in pleuropneumonia owing to the small size and lower visibility of the malignant growth viruses. Unless considerable care is exercised the spheroids may easily be confused with other spherical bodies occurring in most organic fluids. This can only be obviated by a careful preliminary study of uninoculated culture mediums.

Route of Infection in Encephalitis.—It is suggested by Yates and Barnes that the infection in encephalitis (and possibly other central nervous infections) is a symbiotic process; that in the first place the nasal mucous membrane is damaged by one of the catarrhal group of organisms, and that subsequently the virus of encephalitis is inhaled, passes through the damaged mucous membrane, and is absorbed into the brain via the perineural lymphatics.

Medical Journal of Australia, Sydney

1: 683-698 (June 27) 1925

Public Health and the Medical Practitioner. J. H. L. Cumpston.—p. 683.
Organic Factor in Mental Disease. C. Henry.—p. 686.
Occurrences of Distome Cercerie in Limme Brazieri (Smith). B. Bradley.—p. 690.
Cretinism. M. J. Plomley.—p. 690.
Pregnancy After Removal of Sixteen Fibromyomas. A. S. Vallack.—p. 691.

2: 1-28 (July 4) 1925

Myxedema: A Sequel. A. A. Lendon.—p. 1.
Myxedema. J. C. Verco.—p. 2.
Diathermy or Thermopenetration in Treatment of Disease. F. J. Stansfield.—p. 5.
Education and Training of Cripples in United States. W. Vickers.—p. 9.
*Vaccine Treatment of Pertussis. R. Southby.—p. 11.

Vaccine Treatment of Pertussis.—Of 112 children suffering from pertussis Southby treated seventy-four with vaccine and thirty-eight without. Of the patients treated with vaccine there was definitely a greater proportion improved than in the group which had no vaccine. The course of illness was slightly shortened by the use of vaccine in the babies, but in older children there was practically no difference between the two groups. The vaccine should be given in large doses and as early as possible to obtain the optimum effect.

2: 29-62 (July 11) 1925

*Sacral Anesthesia. L. J. J. Nye and C. L. Paine.—p. 29.
Narcolocal Anesthesia in General Surgery. C. E. Corlette.—p. 32.
Medical Postgraduate Work in England and Scotland During 1924. T. H. R. Mathewson.—p. 42.

Sacral Anesthesia.—Nye and Paine are especially enthusiastic about caudal block which is an extremely simple procedure and has quite a large field of usefulness. They stress the necessity of a thorough knowledge of the anatomy of the parts involved, paying strict attention to asepsis and technic and particularly to gentle manipulation.

Bulletin de l'Académie de Médecine, Paris

94: 781-804 (July 15) 1925

*Insulin in Treatment of Ulcers. H. Chabanier et al.—p. 782.
Atropin Versus Whole Belladonna. Lemay and Jaloustre.—p. 784.
*Reflex Tests for Study of Vegetative System. Petzetakis.—p. 786.
The Microglia in Senile Plaques. Urechia and Elekes.—p. 795.

Combined General and Local Insulin Treatment of Leg Ulcer.—Chabanier, Lumière and Lebert treated with insulin ten nondiabetic patients, with varicose ulcers. Two daily injections, of 40 units each, were given, and dressings with insulin ointment were applied locally. Neither special diet nor rest were prescribed. In one of the patients, aged 61, with two ulcers of twenty years' standing, under the general and local insulin treatment, one ulcer healed in nineteen days, the other in thirty. Another patient, aged 51, with recurrent ulcer of the leg the last ten years, was cured in ten days, the ulcer completely healed. In a diabetic girl, treated during the last two years with large doses of insulin (80 units daily), an ulcer had developed on each sole in the last three months. Applications of insulin ointment were followed by total healing of the ulcers in less than a month.

Compression of Suborbital Nerve in Tests of the Vegetative System.—Petzetakis says that the stimulus from compression of this nerve is transmitted to the bulbar gray matter by Willis' nerve. The stimulus is then reflected to the vagus, sympathetic or the phrenic nerves, inducing simultaneous orbitocardiac, orbitopulmonary and orbitovascular reflexes, study of which throws light on the physiology of the vegetative nervous system, especially the condition of sympathicotonia and vagotonia.

Bulletins de la Société Médicale des Hôpitaux, Paris

49: 1007-1056 (July 3) 1925

*"Etiology of Rickets." A. Léri.—p. 1007.
*"Zoster and Varicella." Léri.—p. 1011.
*Respiratory Changes with Uremia. C. Achard.—p. 1012.
Case of "Hemicraniosis." Léri and Layani.—p. 1013.
Case of Recklinghausen's Osteitis. C. Achard and J. Thiers.—p. 1019.
Brain Tumor with Hyperalbuminosis. Pollet and Stieffel.—p. 1024.
Cyanosis with Insufficiency of Right Ventricle. Paisseau et al.—p. 1027.
Case of Pure Uremic Nephritis. Aubertin and Widiez.—p. 1039.
*Skin Eruption from Luminal. Caussade et al.—p. 1042.
Spontaneous Cure of Lung Abscess. Lemierre et al.—p. 1047.

Rickets Developing Where There Is Abundance of Sunlight.—Léri comments on the sequelae of rickets in adults, especially the pain in the bones; it is frequently ascribed to a neurosis, since there are no other manifestations of rickets at the time. Among 32 adults with marked deformities from rickets, 27 were agriculturists, 1 a sailor, and only 4 resided in a city. He recalls that in Nice and Milan, where there is plenty of sunlight but the hygienic conditions are defective, the number of children with rickets is high. In his 32 cases, 29 of the patients belonged to large families, each of them having an average of six brothers or sisters. Eleven of the patients were the last or next to the last child in the family. Lack of proper care and of nourishing food, which may have occurred in these circumstances, are probably responsible for rickets appearing regardless of an abundance of sunlight.

"Herpes Zoster and Chickenpox."—Léri treated a man, aged 51, suffering simultaneously with herpes zoster and a varicelloid eruption. A little girl, who visited the patient, developed chickenpox two weeks later.

Respiratory Disturbances with Uremia.—Achard reports a case of uremia in a young woman, one of whose kidneys had been removed on account of renal tuberculosis two years before. The respiration was of the Küssmaul type; the alkali reserve was very low (18.5) and the urea retention pronounced. In another case, the woman, aged 64, with renal sclerosis, presented coma, intermittent Cheyne-Stokes respiration, a slightly decreased alkali reserve and a marked retention of urea. He believes that the Cheyne-Stokes respiration does not depend on the acidosis, while the Küssmaul dyspnea is connected with it, even without associated ketosis.

Eruption, Resembling Measles, from Phenobarbital.—In Caussade, Tardieu and Lacapère's patient, aged 29, 0.1 gm. of luminal sodium, daily for eleven days, provoked an itching skin eruption, resembling that of measles. Evidently such cases may mislead the diagnosis, especially when the eruption is accompanied by a sore throat and fever. The toxic eruption occurred in 20 per cent. of the cases under therapeutic doses, and is very rare with acute poisoning. Acute or subacute poisoning from the barbituric acid group may be mistaken for epidemic encephalitis, general paresis or alcohol intoxication.

Comptes Rendus de la Société de Biologie, Paris

93: 73-147 (June 19) 1925. Partial Index

*The Liver with Trauma of the Spleen. Ravina and Jovin.—p. 75.
Estimation of Size of Objects. A. Strohl.—p. 76.
*Streptothrix Destroying Diphtheria Bacilli. L. Rosenthal.—p. 77.
Action of Lipoids on Cell Growth. L. E. Baker and A. Carrel.—p. 77.
Blood Serum and Resistance to Chicken Sarcoma. A. Carrel.—p. 85.
Acidosis and Coma in Pancreatectomized Dogs. E. Hédon.—p. 89.
Sulphur of Serum in Melanoderma. Loeper et al.—p. 95.
Conservation of Vitality of Tumor Cells. Dobrovolskaia-Zavadskaia.—p. 97.
*The Bacteriophage in Typhoid. P. Hauduroy.—p. 100.
Action of Antipyrin in Diabetics. Rathery and Kourilsky.—p. 102.
Fatigue and Muscle Degeneration. Apostolaki and Deriaud.—p. 105.
*Bacillus Sporogenes in Appendicitis. Weinberg and Prévot.—p. 106.
*Determination of Venous Pressure. L. Payan and E. Giraud.—p. 109.
Infection of Oysters with Typhoid Bacillus. S. Costa et al.—p. 112.
*Vaccines from Bacilli Killed by Gold. H. Violle.—p. 115.
Oxygen and Carbon Dioxid in Apnea. Périot and Moutte.—p. 116.
*Vaccination Against Dysentery. Costa et al.—p. 122.
*Blood from Insulin-Treated Animals. Mauriac and Aubertin.—p. 130.
*Changes in the Thyroid from the Food. C. Magarinos Torres.—p. 135.
Leukemia and Splenectomy. E. de Souza Campos.—p. 143.

Lesions of Liver from Traumatic Autolysis of Spleen.—In their experiments on guinea-pigs and rabbits, Ravina and Jovin induced various lesions in the parenchyma of the spleen. Fifteen days after this, the liver showed signs of injury, principally characterized by lysis of the cellular mitochondria. The lesions appeared more pronounced in the center of the lobe than around the hilum. This may explain the degeneration or sclerosis of the liver, associated with chronic enlargement of the spleen. The proteoses and polypeptids, carried by the splenic vein, induce the lesions in the liver. Consequently it is obvious that splenectomy might exert a favorable influence on lesions in the liver of splenic origin.

Lysis of Diphtheria Bacilli by a Streptothrix.—Rosenthal has isolated a species of streptothrix which displays a lytic action on the diphtheria bacillus. This streptothrix seems to resemble the group described by Almquist and Gasperini.

Significance of Bacteriophage in Typhoid Fever.—Hauduroy observed three cases of typhoid with high fever, with rapid and sudden defervescence under the influence of an active bacteriophage which was manifest. He thinks that the bacteriophage which changed the positive culture into a negative in vitro was evidently responsible for the defervescence and subsequent recovery of the patient.

Species of Sporogenic Bacillus Discovered in Appendicitis.—Weinberg and Prévot found in an inflamed appendix a highly pathogenic species of *Bacillus sporogenes*. It was agglutinated by a sporogenes antiserum, and was refractory to the antiserum of the septic vibrio. As the fever still persisted after removal of the appendix, an injection of gas gangrene antiserum was given. It was followed by reduction of the fever.

Manometer for Estimation of the Venous Pressure.—Payan and Giraud describe the technic and apparatus (two arm bands and Claude's manometer) for determination of the venous pressure, without puncture of the vein. The measurement, they say, is almost as exact as with the puncture method.

Vaccines from Bacilli Killed by a Gold Salt.—Injections of dysentery bacilli, treated with gold chlorid, proved to be harmless in rabbits and mice. Paratyphoid bacilli, treated with gold chlorid, and given by the mouth, did not induce any disturbances in mice. The animals appeared immunized against the living bacilli given by mouth several days afterward, while the control animals died from ingestion of the living bacilli after six or eight days. The agglutination of the bacillus by the serum of animals was more pronounced with the typhoid bacillus than with the dysentery bacillus, both treated with gold chlorid. The bacteriolytic and antitoxic action of the gold may thus be utilized in vaccination by the digestive tract.

Vaccination by the Digestive Tract Against Dysentery.—Preventive immunization was used by Costa, Boyer and van Deinse in an epidemic on the Dutch ship *Trump* during its sojourn in French waters. All the 348 men were given by the mouth, for three days, a daily dose of 1 c.c. of the specific vaccine. Only one of the vaccinated developed a mild dysentery, while before the vaccination about fifty cases had occurred within six weeks.

Changes of Glycemia from Injections of Blood of Animals Treated with Insulin.—Mauriac and Aubertin assert that the injection of blood from an animal with hypoglycemia, under insulin, induced hyperglycemia in a rabbit. They are inclined to ascribe this reverse effect of the blood to the stimulation exerted on the glycemia center or on that of epinephrin secretion.

Effect of Food on Structure of the Thyroid.—Magarinos Torres noted that the structure of the thyroid gland changed in rats under the influence of certain foods. The changes were of a transient nature.

Paris Médical

55: 465-480 (May 23) 1925

*Inaugural Lecture of Neurologic Course. J. M. Charcot.—p. 465.
*Symptomatology of Amyotrophic Lateral Sclerosis. Charcot.—p. 470.
*Nervous Disturbance from Lightning Stroke. Charcot.—p. 475.

57: 1-36 (July 4) 1925

Cardiovascular Diseases in 1925. P. Lereboullet and J. Heitz.—p. 1.
Intermittent Claudication. Vaquez.—p. 17.
Myocardial Syndrome in Heart Insufficiency. Laubry and Walser.—p. 21.
Treatment of Tuberculous Pericarditis. C. Lian and G. Corneau.—p. 26.
Radioscopy of Evolution of Dilatation of the Heart. E. Bordet.—p. 30.

57: 37-52 (July 11) 1925

Ptosis and the Balance in the Abdomen. Fraikin.—p. 37.
Epidemic of Cerebrospinal Meningitis. J. Dayras and J. Marie.—p. 41.
Recurrent Cerebrospinal Meningitis. L. Izard.—p. 45.
Closure of Nostrils in Inspiration. E. Feldstein.—p. 50.

The Charcot Lectures.—The *Paris médical* reproduces here in honor of the Charcot centennial three of the more famous lectures delivered by Charcot. He died in 1892.

Presse Médicale, Paris

33: 929-944 (July 11) 1925

Stationary Form of Tuberculous Sclerosis of Apex. Bernard et al.—p. 929.
Preventive Vaccination in Surgery. E. Blanco Acevedo.—p. 932. See abstract in THE JOURNAL, July 11, p. 151.
Parathyroid Extract and Calcemia. R. Turpin.—p. 933.

33: 945-960 (July 15) 1925

*Reconstruction of Acetabulum Upper Brim. Lance.—p. 945.

Plastic Operation for Congenital Dislocation of the Hip Joint, Applicable at All Ages.—Lance gives an illustrated description of his technic, applied personally in eleven cases, including older children as well as adults. The pain and limp were caused by a defective hold for the femoral head, owing to the inadequate superior margin of the acetabulum. After the head of the femur had been reduced and the reduction maintained by forcible and extreme abduction, a graft, from 18 to 20 cm. long and 8 to 12 mm. wide, was taken from the tibia and cut in three pieces. These were implanted side by side in a recess made for them in the lower part of the condyle. The projecting ends served as a projecting shelf to supplement the defective upper brim of the socket. The recess in the condyle was made with a chisel prying the lower portion of the bone partly loose, thus leaving a triangular space. A cast was applied for a month. By this means the tendency to dislocation was corrected even in the nonreduced luxations. There is no reason to doubt that the cure, persisting for a year, will be definite.

Schweizerische medizinische Wochenschrift, Basel

55: 637-660 (July 9) 1925

*The Cytology of the Sputum. E. Propper.—p. 637.
Actinomycosis After Injuries to the Head. A. Christ.—p. 643.
*Acrodynia. E. Jenny.—p. 645.
The *pH* Balance in the Blood. A. Gigon.—p. 651.

The Cytology of the Sputum.—Alveolar epithelial cells are found in every pulmonary expectoration; they may phagocyte coal pigment and erythrocytes. Neutrophil leukocytes engulf bacteria, especially tubercle bacilli. Eosinophils are found not infrequently; their increase after tuberculin injections is a favorable prognostic sign. Propper believes that lymphocytes occur only in small number, and that the monocytes are derived from reticulo-endothelial cells; the latter are numerous in caseous pneumonia and in prognostically unfavorable cases of pulmonary tuberculosis.

Acrodynia.—Jenny reports four cases of this disease whose main characteristics are disturbance of sleep, lack of appetite and severe sweats. Secondary infections result in slow healing abscesses and ulcerations or even in gangrene. The extremities are edematous and cyanotic. The musculature is atrophic and hypotonic. Tremor, disturbances of the knee-jerk, paresthesias, tachycardia and hypertension are present. The duration is four to six months; death may occur through pneumonia. The etiology is not known. He queries whether the clinical picture is the same as pink disease.

Policlinico, Rome

32: 221-268 (May 15) 1925. Surgical Section

*Roentgen-Ray Treatment of Lymphosarcoma. G. Cavina.—p. 221.
Three Cases of Malignant Lymphogranuloma. G. C. Pratesi.—p. 244.
*Experimental Wounds of Biliary Passages. F. Marinelli.—p. 249.
Histology of a Postherniotomy Band. A. Miliani.—p. 265.

Roentgen-Ray Treatment of Sarcoma.—Cavina reports the unusual findings in a lymphosarcoma in the mediastinum and neck of an elderly woman, two weeks after deep roentgen irradiation. The patient had succumbed to pneumonia. The tumor showed numerous patches of necrosis of varying intensity, evidently proportional to the penetration of the rays. Between the cells there were strips of an amorphous, hyaline substance that looked as if a fluid had forced its way between the cells and had coagulated. He compares this with similar cases on record, remarking that none seems to have been examined at such a brief interval after the exposure.

Wounds of the Biliary Passages.—Marinelli experimented in various ways on eighteen rabbits. The wounds in the gallbladder generally healed promptly and smoothly, but wounds in the common bile duct refused to heal. The direct cause of death was an acute hemorrhagic glomerular nephritis.

Prensa Médica Argentina, Buenos Aires

11: 1185-1220 (May 30) 1925

Research on the Sympathetic: Emotional Erythem, etc. M. R. Castex and A. F. Camauer.—p. 1185.
*Eleven Cases of Tumors in the Heart. R. G. Cabred and D. Mosto.—p. 1194.
Frequency of Unsuspected Acquired Syphilis. J. L. Carrera.—p. 1211.

Tumors in the Heart.—Cabred and Mosto comment on the rarity of the heart as a site for tumor. They mention that in 2,942 necropsies at the Johns Hopkins Hospital only ten cases of cancer in the heart were discovered, and only one was primary. At the Berlin institute, among 6,655 necropsies, only fifteen secondary carcinomas were found, and Aschoff encountered only one secondary carcinoma in 4,500 necropsies and Willingk nine in 4,547. In their own institute they discovered four secondary tumors at 300 necropsies during the last year, and there are ten specimens in the museum. Whether primary or secondary, the tumors usually escape detection during life as they induce no characteristic symptoms, the clinical picture blending with that of heart disease in general. Fibromas form the majority of tumors of the heart. Llambias interpreted one in the collection as a lymphosarcoma; the others were all metastases of tumors in the stomach, intestine or lung, or they were sarcomas. They give twenty-four illustrations of the eleven cases, and remark that notwithstanding the heart is so seldom the seat of a tumor, yet single metastasis in this organ is comparatively frequent.

12: 1-60 (June 10) 1925

Spontaneous Choreiform Attack of Pleural Origin. A. J. Raimondi and J. Queirel.—p. 1.
Functional Insufficiency of the Pancreas of Splenic Origin. M. R. Castex.—p. 7.
Normal and Pathologic Lipochromemia. C. Bonorino Udaondo et al.—p. 13.
Relative Immunity in the Malaria of Birds. S. Mazza.—p. 17.

*Ascites from Cirrhosis of the Liver. N. Tagliavacche.—p. 19.
Intratracheal Injections of Iodized Oil as Aid in Diagnosis. G. Segura. —p. 24.
Amaurotic Family Idiocy; Necropsy. Marque and Camauer.—p. 41.

Ascites from Cirrhosis of the Liver.—Tagliavacche reports the cure in a case of extensive ascites, after failure of medical treatment, by Talma's intramural omentopexy, combined with drainage. He gives ten illustrations showing the technic and the persistence of the cure, four years to date, in his case.

Revista de Medicina y Cirugía, Caracas

8: 69-89 (Feb. 28) 1925

*Pseudomalaria and Pseudotuberculosis. F. de P. Rivas Maza.—p. 69.

False Malaria and False Tuberculosis.—Rivas Maza describes four cases to confirm his warning as to the danger of mistaking intestinal moniliasis or syphilis for tuberculosis or malaria. With a persisting fever, rebellious to quinin and to arsenic, without antecedents or physical signs of any importance, although laboratory tests may be negative, yet treatment with mercury or arsphenamin should be tentatively applied. If the signs suggest tuberculosis or intestinal dyspepsia, and the sputum and the blood findings are negative, while a fungus is found in the stools, the genus of the pathogenic monilia should be determined.

Revista Médica del Uruguay, Montevideo

28: 89-104 (March) 1925

*Acanthosis Nigricans. J. Brito Foresti and B. Vignale.—p. 89.
*Melancholia Asthma. A. Sicco.—p. 94.
Case of Acquired Mutism. V. Pérez.—p. 100.

Acanthosis Nigricans.—The case reported is the first to be published in Uruguay. Brito Foresti and Vignale state that scarcely more than a hundred cases have ever been published. Their patient was a man, aged 48, who died after a gastroenterostomy and secondary jejunostomy for cancer of the bowel. The pigmentation of the skin may have been connected with the cancer, by means of some lesion of the sympathetic nervous system.

Melancholia with Asthma.—The intense dyspnea was the principal manifestation, and almost the only one, of periodical attacks of a psychosis of the type of recurring melancholia. The woman had had a previous period of asthma, recurring for nine months, eleven years before. The present nontoxic dyspnea occurred with intervals of perfect health. No benefit was derived from treatment with ovarian extract, epinephrin, atropin, morphin, heart tonics and a fixation abscess, but improvement amounting to a cure occurred while she was being treated with progressive doses of belladonna (0.06 gm. daily).

Semana Médica, Buenos Aires

1: 1201-1256 (June 4) 1925

*Present Conception of Congestion of the Lung. T. Martini and C. A. Gourdy.—p. 1201.
Mikulicz's Disease. F. Bazán and R. Maggi.—p. 1214.
*Vaccine Therapy in Gastric Ulcer. R. Acosta.—p. 1218.
A Triplet Pregnancy. M. L. Pérez and A. Jakob.—p. 1220.
Syphilitic Paralysis of the Facial and Auditory Nerves. R. Becco.—p. 1224.
Impermeable Stenosis of the Urethra. J. Salleras.—p. 1226.
Treatment of Toxic Rheumatism. S. Libarona Brian.—p. 1229.
Action of "Mandelin Reagent" on Strychnin. L. Rossi.—p. 1233.
Insulin Treatment of Uncontrollable Vomiting of Pregnancy. J. J. Darnet.—p. 1235.
Warning Against Quinin for Pregnant Women. A. Casotto.—p. 1237.

Cortical Pleuritis.—Martini and Gourdy remark that in adults, cortical pleuritis is responsible for the most frequent symptoms (apart from tuberculosis) of acute inflammatory processes in the lower air passages. True congestion of the lungs is very rare. The great majority of these cases of cortical pleuritis are of tuberculous origin, and these are generally located at the apex and interlobar regions. The nontuberculous processes are more liable to be located at the base. The tuberculous forms are more frequent in the young, especially in young women. They add that negative laboratory findings do not exclude a tuberculous origin. The immediate prognosis is good, but the ultimate outcome depends on the etiology. Treatment should be symptomatic.

Vaccine Therapy in Gastric Ulcer.—Acosta reports five cases which demonstrated an unmistakable connection between injection of a polyvalent vaccine and the disappearance of the pain with gastric ulcers. This relief may be due to the protein action.

Deutsche medizinische Wochenschrift, Berlin

51: 1139-1180 (July 10) 1925

How to Stop Hemorrhages with Clamps After Parturition. M. Henkel. —p. 1139.
The Carotid Branch of the Glossopharyngeal Nerve. H. E. Hering.—p. 1140.
A Rough Determination of the Basal Metabolism. Arnoldi.—p. 1141.
Simple Apparatus for Determination of Basal Metabolism Rate. H. Herxheimer.—p. 1143.
*Exogenous Reinfection in Tuberculosis. J. W. Samson.—p. 1144.
The Psychology of the Tuberculous Patient. E. Stern.—p. 1146.
Metastasis and Spontoneous Cure in Cancer of the Testis. Prym.—p. 1149.
A Fatal Pericardial Cyst. H. Nossen.—p. 1150.
Injuries to the Bladder in Opening Douglas Abscesses. Roedelius.—p. 1151.
Epidemic Alopecia. E. Hofmann and H. Martin.—p. 1153.
*Alastrim and Variola. W. H. Hofmann.—p. 1154.
Modification of Bouquet-Nègre' Complement Fixation. Berliner.—p. 1156.
Complement Fixation in Echinococcal Infection. L. Jaffé.—p. 1156.
Choice of the Donor in Blood Transfusions. A. Mandelstamm.—p. 1157.
A Sanatorium for Surgical Tuberculosis. M. Borchardt.—p. 1158.
Recovery Under Convalescents' Serum in a Case of Epidemic Encephalitis. F. W. Bremer.—p. 1159.
Recovery in Case of Landry's Paralysis. J. Donath.—p. 1160.
Tuberculosis and Cyclic Insanity. W. Freund.—p. 1160.
Poisoning with Columbine Flowers. Hirsch-Mamroth.—p. 1161.
Healing of Incipient Cancer of the Uterus. N. Flaischlen.—p. 1161.
A Little Help in Catheterization. E. Eisner.—p. 1161.
Recent Progress in Obstetrics. F. Geppert.—p. 1162. Cont'n.
Proposed Legislation on Venereal Diseases. E. Galewsky.—p. 1164.

Exogenous Reinfection in Pulmonary Tuberculosis.—Samson analyzed the opportunities for infections in 1,300 patients and found that in 35.3 per cent. coresidence with tuberculous persons was recorded, whereas this was definitely denied in only 19.2 per cent. The disease is more frequent in persons who have lived with several tuberculous patients. Samson believes that these and some additional findings speak strongly in favor of the important pathogenic rôle of exogenous reinfection or superinfection in adults.

Alastrim and Variola.—Hoffmann believes that alastrim from an epidemiologic point of view should be regarded as smallpox. Clinically, alastrim resembles very much smallpox, though it tends more to milder forms. Its etiology is not known, and it may be the same as for variola. Smallpox vaccination immunizes against alastrim.

Klinische Wochenschrift, Berlin

4: 1337-1384 (July 9) 1925

*Stimulation and Paralyzing as Physical-Chemical Processes. R. Höber. —p. 1337.
The Hormone of the Pancreas. H. Langecker and W. Wiechowski.—p. 1339.
Dysoxidative Carbonuria. A. Bickel and Kauffmann-Cosla.—p. 1343.
Fat-Soluble Compounds of Bismuth. Herrmann and Nathan.—p. 1345. Conc'n.
Congenital Syphilis and Endocrine Secretion. Buschke and Gumpert.—p. 1347.
The Paradoxic Sensitiveness to Epinephrin. Szondi.—p. 1349.
The Double-Colored Mastix Reaction. von Thurzó and Kulcsár.—p. 1352.
*Digitalis by the Rectum. S. G. Zondek.—p. 1353.
Biology of the Recurrens Spirochete. Kroó.—p. 1355.
Treatment of Roentgen-Ray Ulcers. F. Veiel.—p. 1356.
Electrophysiologic Studies of Fatigue. W. Strauss.—p. 1358.
Muscular Activity of the Spleen Capsule. Loewe and Faure.—p. 1358.
Therapy of Cerebrospinal Syphilis. R. Henneberg.—p. 1359.

Physicochemical Points of View in Physiology.—Each stimulation of the tissues of the skin produces an increased permeability of the skin for ions. Höber shows with many examples that it is a universal law that stimuli of any kind lead to an increased permeability of cell membranes. It is evident that this phenomenon is of prime importance in the nutrition of cells. These alterations in the permeability are due to changes in the electrolyte concentration in the cell membranes. In narcosis, the cell membranes are rendered less permeable by the action of the narcotic; this closes the cell for assimilatory and fermentative functions.

Digitalis by the Rectum.—Zondek gives during the first few days two or three suppositories, each containing 0.075 gm. of digitalis leaves; then one suppository daily up to a total of twenty. The resorption is at least as good as in

oral administration. In stasis in the portal system, the rectal administration is more successful.

4: 1385-1432 (July 16) 1925

Emotion and Logic in Homeopathy. W. Heubner.—p. 1385. Cout'd.
*The Ovarian Hormone. B. Zondek and S. Aschheim.—p. 1388.
Sensory Nerves of Blood Vessels. Schilf and Stahl.—p. 1390.
*The Graham Gallbladder Test. P. Kaznelson and F. Reimann.—p. 1390.
Different Types of Colon Bacilli in Pyelitis. Bitter and Gundel.—p. 1395.
*Exclusive Radium Therapy in Cancers of the Cervix. F. Voltz.—p. 1396.
The Action of Caffein. Handovsky and Uhlenbruck.—p. 1401.
Kahn's Serologic Test for Cancer. Nelken and Glücksmann.—p. 1404.
Retention Tube in Examination of the Secretory Function of the Stomach. J. Vándorfy.—p. 1405.
Libido Producing Substances in Female Blood. S. Loewe.—p. 1407.
Localization of Central Respiratory Disturbances. Spiegel and Enghoff. —p. 1407.
The Treatment of Gout. K. Harpuder.—p. 1408.
Coué's Method. C. Birnbaum.—p. 1410.
*Abderhalden's Reaction. P. Hirsch.—p. 1412. Begun, p. 1365.

The Ovarian Hormone.—The cytology of the vaginal secretion in the white mouse is closely dependent on the physiologic cycle of the ovary, as also the hormone action of implanted material in the castrated animal. Zondek and Aschheim examined on this basis the action of different organs on the sexual cycle. Glandular organs and endocrines did not influence the sexual periods. Ovarian substance provoked the cycle in a few days. Only the wall of mature or nearly mature follicles or their liquid content is active. The only other organ which contains the active principle is the placenta.

Roentgen-Ray Examination of the Gallbladder.—Kaznelson and Reimann found that the Graham-Cole method for rendering the gallbladder visible in roentgen-ray pictures gives very valuable diagnostic results. A normal gallbladder will always be filled with the tetrabromphenolphthalein; an empty gallbladder is always diseased. The reaction of the gallbladder after peptone or pituitary extract is undoubtedly a contraction of its muscular coat.

Exclusive Radium Therapy in Cancer.—Voltz publishes a statistical presentation of the results of radium treatment in cancers of the uterine cervix in Döderlein's clinic. From 1912 to 1918, 755 patients were treated; 110 were operable cases, with 43.6 per cent. cures; 130 were borderline cases with 22 per cent. cures; 340 were inoperable cases with 6.7 per cent. cures; 169 were hopeless cases, with one cure. The figures for 1918 and 1919, with a total of 272 treated patients, are essentially the same. No case is listed in these statistics unless five years of observation have elapsed. The technic of treatment and selection of patients is discussed, and a comparison with operative results is made.

Abderhalden's Reaction.—Hirsch discusses his modification of the original test for the diagnosis of pregnancy by means of interfereometric quantitative determinations of the protein split products. He believes that the results have been very satisfactory. Most experiences have been gained in veterinary work.

Medizinische Klinik, Berlin

21: 991-1032 (July 3) 1925

Adnexitis. M. Henkel. —p. 991.
*The Inferior Depressor Nerve of the Aorta. A. Tschermak.—p. 995.
Mesenteric Thrombophlebitis in Two Boys After Appendicitis. O. M. Chiari.—p. 998.
Insulin. O. A. Rösler.—p. 1000.
*Action of Roentgen Rays on Intestinal Tract. R. Lenk.—p. 1001.
*The Stomach in Cigaret Smokers. E. Adler.—p. 1005.
Chronic Gastritis. R. Korbsch.—p. 1006. Conc'n.
Injection of Lobelia into the Cisterna. Janossy.—p. 1009.
Induced Pituitary Hyperglycemia in Infants. W. Stern.—p. 1011.
Case of Postmortal Formation of Hematin. Winternitz and Haurowitz. —p. 1012.
Therapeutic Value of Lipoids: Experimental. J. Magat et al.—p. 1013.
Postoperative Pulmonary Complications. C. Lagemann.—p. 1014.
Occupational Injury as Factor in Sclerodermia. Schnizer.—p. 1014.
Psychology in General Practice. H. Fendel.—p. 1015. Cont'n.
Recent Progress in Practical Surgery. Kroll.—p. 1018. Conc'n. p. 1058.

Roentgen-Ray Therapy in Peptic Ulcers.—Lenk believes that roentgen irradiation has a beneficial effect in ulcers because it relieves spastic conditions locally. He emphasizes to use frequent and small doses of the rays.

The Stomach of Cigaret Smokers.—Adler believes that heavy cigaret smokers not infrequently develop symptoms which resemble closely those of peptic ulcers. The acidity, however, is usually normal or only slightly increased. The peristalsis is usually increased and spasmodic. Therapeutically, it is most always sufficient to make the patient stop smoking, at least before the midday meal.

Münchener medizinische Wochenschrift, Munich

72: 1101-1140 (July 3) 1925

Ophthalmoscopy in Red-Free Light. A. Vogt.—p. 1101.
Colloid Chemical Studies in Paroxysmal Hemoglobinuria. F. V. von Hahn.—p. 1104.
*Treatment of Chronic Phlebitis. Linser.—p. 1105.
Treatment with the Patient's Own Blood. C. Rhode.—p. 1107.
*Sex Frequency of Congenital Syphilis. Bratusch-Marrain.—p. 1109.
Radical Phrenicotomy. O. Goetze.—p. 1110.
History of the Stethoscope. A. Kühn.—p. 1113.
Pathogenesis of Pernicious Anemia. K. Noodt.—p. 1114.
*Action of Insulin. E. F. Müller et al.—p. 1114. Conc'n.
Orthopedic Arch Supporters. G. Hohmann.—p. 1118.
Physicians, etc., in Württemberg Legislature. Hölscher.—p. 1121.

Artificial Thrombi in Phlebitis.—For many years very favorable reports have been published about the treatment of varicose veins with local intravenous injections of 0.5 to 1 per cent. mercuric chlorid or 10 to 15 per cent. sodium chlorid which results in quick formation of solid thrombi, firmly adherent to the venous wall. Linser, the author of this method, advocates now the same procedure for the treatment of chronic phlebitis. This treatment should not be used in acute cases.

Congenital Syphilis.—Bratusch-Marrain has examined the records of 435 cases and found that about 60 per cent. of the patients with congenital syphilis are males.

Insulin Action.—E. F. Müller and H. J. and R. P. Wiener have found in careful experimental work that insulin works not only as the pancreatic hormone, but that it has a stimulating action on the parasympathetic nerves, which results in an increase of glycogen formation in the liver. This action is particularly pronounced after intracutaneous injections. Müller has shown in previous work that very powerful parasympathetic stimuli may be sent from the skin. After intracutaneous insulin injection, the first response, before any insulin is resorbed, is the parasympathetic stimulation of the liver; after the resorption, which is delayed in intradermal injection, the well known hormone action takes place. The first action can be depressed by atropin which paralyzes the parasympathetic fibers. It is much less pronounced in subcutaneous injection, and it is not present at all after intravenous administration. The action of insulin on the nervous system, in contradistinction to its action as a hormone, is very little dependent on the dosage.

72: 1189-1230 (July 17) 1925

Pediatrics as a Specialty. A. Schlossmann.—p. 1189.
*Hutchinson's Teeth. Buschke and Langer.—p. 1191.
Trichinosis. G. B. Gruber.—p. 1193.
*Rectal Versus Vaginal Examination by Midwives. R. Demme.—p. 1198.
*Appendicitis and Ovarian Hemorrhages. Korach.—p. 1199.
"Agranulocytosis." R. Bantz.—p. 1200.
The Milk of Syphilitic Women. E. Martin.—p. 1205.
A Micromethod for Determination of Blood Sugar. Blumenthal.—p. 1205.
Fractures of the Patella and Femur. F. Lange.—p. 1205.
Medical Societies for Physical Exercise. Schnell.—p. 1207.
The Danish Sanocrysin Treatment of Tuberculosis. Wychgram.—p. 1209.

Pathogenesis and Diagnosis of Hutchinson's Teeth.—Buschke and Langer have found in patients with congenital syphilis, and with typical Hutchinson's teeth, that the premaxillary bone was hypoplastic and, therefore, the gums just above the teeth were concave. A similar process is found on the symphysis of the mandible. These findings lead the authors to believe that the peculiar shape of the incisor teeth in congenital syphilis is primarily due to the hypoplastic development of their bony matrix. The concave gum is diagnostically very significant, and does not occur in rickets.

Rectal Examinations in the Practice of Midwives.—Demme makes a plea for the more frequent—or preferably exclusive—use of the rectal method for obstetrical examinations by midwives. The danger of infections would be greatly diminished, and the conditions that a midwife needs to know for her actions can be fully ascertained by external and rectal exploration.

Appendicitis and Ovarian Hemorrhages.—Korach believes that it is frequently not possible to differentiate between appendicitis and a follicular hemorrhage from a corpus luteum. He advises operation in case of doubt.

Wiener Archiv für innere Medizin, Vienna

10: 467-632 (June 15) 1925. Dedicated to Jaksch-Wartenhorst

Length of Muscle Fibers in Contracted Muscles. R. Fick.—p. 471.
Induced Heterotopic Heart Pulsation. H. E. Hering.—p. 497.
*Kidney Function in Severe Diabetes. O. Klein.—p. 507.
*Babinski's Reflex. J. Löwy.—p. 543.
*Sugar and the Secretion of Hydrochloric Acid. P. Mahler.—p. 549.
Sequelae of Epidemic Encephalitis. J. Mendl.—p. 559.
Discoloration of Skin and Nails by Vegetable Products. K. Pichler.—p. 569.
Pluriglandular Affections. H. Pribram.—p. 575.
The Circulation in Hemiplegia. H. Rotky and O. Klein.—p. 585.
Case of Pyramidon Poisoning. H. Rotky.—p. 595.
Paroxysmal Tachycardia. A. Selig.—p. 603.
Abdominal Plethora. K. Walko.—p. 609.

Renal Function in Severe Diabetes.—In severe diabetes the concentrating power of the kidney is not impaired; polyuria is present even in periods without intake of fluids. The diluting power is unimpaired. There may be found a delay or decrease of water secretion. Sodium chlorid may be retained in severe cases; this occurs especially when, simultaneously with sodium chlorid, glucose or urea are given in large amounts. The diabetic kidney does not seem to be able to secrete large amounts of different substances at the same time. Klein suggests that this relative insufficiency may account for the increased threshold value for glucose in cases of long standing.

The Babinski Reflex.—Löwy found that in some cases with a negative Babinski it is possible to produce dorsal flexion of the big toe by testing simultaneously for the Babinski and the Oppenheim reflex. This condition indicates a less complete lesion in the pyramids than a positive individual reflex.

Sugar and Gastric Secretion.—Mahler found that a 5 per cent. sugar solution stimulated secretion in all persons who reacted normally to ingested food. In patients with hyperacidity, a considerable increase of mucin is simultaneously observed. A 20 per cent. sugar solution decreases the secretion. Different types of sugar influence the gastric secretion to a different degree; this difference is not dependent on the degree of their sweetness.

Wiener klinische Wochenschrift, Vienna

38: 777-802 (July 9) 1925

Diverticula of the Esophagus. G. Lotheissen.—p. 777.
*Hypophysis and Metabolism. P. Liebesny.—p. 780.
*Syphilitic Fever. F. Freund.—p. 786.
A Convenient Set of Hegar Bougies. R. Joachimovits.—p. 788.
The Sugar Value in Food. O. Porges.—p. 788.
Vaccination Against Rabies. B. Busson.—p. 789.
Indications for Tonsillectomy in Internal Disease.—K. Reitter. Supplement.—pp. 1-14.

The Pituitary and Basal Metabolism.—The effect of deficient and of excessive function of the hypophysis on the basal metabolism and on the specific dynamic influence of ingested food is not as clear-cut as in the case of the thyroid, because the hypophysis has two different internal secretions with partially antagonistic action. Liebesny found that in patients with acromegaly and with hypogenitalism, the basal metabolic rate and the specific dynamic effect were increased, but not in every case. In two cases of hypophyseal dwarfism, and in six cases of tumors of the hypophysis, the specific dynamic value was below normal.

Febrile Syphilis.—Freund states that during the last few years the occurrence of high and protracted fever in the first and second stage of syphilis is more frequent. These cases resemble more the acute exanthematic diseases. Similar cases were apparently observed frequently during the fifteenth and sixteenth centuries.

Zeitschrift für klinische Medizin, Berlin

101: 475-746 (June 24) 1925

Blood Pressure in Infectious Diseases. F. v. Bormann.—p. 475.
The Leukocytes After Recurrens Treatment in General Paralysis. Sagel.—p. 499.
The Hemogram. B. Ziemilski.—p. 505.
Action of Tuberculins by the Mouth. Pockels.—p. 518.
*Castration and Production of Antibodies. Weyrauch.—p. 524.
*Camphor and Bile Formation. H. Schreiber and F. Herrmann.—p. 529.
Congenital Hematoporphyria in Adult Man. W. Robitschek.—p. 540.
*Pathogenic Factors in Essential Hypertension. K. Westphal.—p. 545; p. 558; p. 566; p. 584.
Interfereometric Studies of the Blood Serum. L. Beltz and E. Kaufmann.—p. 671.
Catarrhal Icterus and Icterus After Arsphenamin. H. Ruge.—p. 684.

Castration and Antibody Production.—Weyrauch did not find any difference in the production of antibodies (hemolysins, agglutinins and precipitins) between a group of thirty-three castrated male rabbits and thirty-three normal male rabbits.

Camphor and Bile Secretion.—Schreiber and Herrmann found that oil of peppermint increases the bile secretion; oil of thyme does not. A 50 per cent. solution of camphor in ethereal oils produces a paralysis of the bile ducts for a long time; a 20 per cent. solution in oil of peppermint produces a paralysis of the bile ducts only for a short time, which is followed by a noticeable polycholia. All these examinations were made by the use of the duodenal tube.

Experimental and Clinical Studies in Essential Hypertensions.—A great many correlated factors enter into the pathogenic mechanism of essential hypertension. Westphal centered his interest chiefly on the rôle of the cholesterol, and found that a hypercholesteremia was present in 71 per cent. of patients with essential hypertension; the increase of blood-cholesterol is not found in conditions of decompensation (edemas, cachexia). But cholesterol is not the exclusive cause of essential hypertension; protein cleavage-products may cause the same condition. In nephroses, pregnancy and icterus Westphal showed that in spite of a hypercholesteremia the arterial wall does not resorb cholesterol and no hypertension results. Primary hypotension and secondary hypotension in infectious diseases are frequently associated with a decrease in the blood cholesterol. Whether hypercholesteremia leads to hypertension or not depends much on the function of the thyroid and the sexual glands, on the autonomous nervous system, on the ion balance in the blood, and on the condition of the heart. Westphal attempted successfully to use his theoretical conclusions as a basis for therapeutic measures. But further experiences are necessary to confirm the validity of his very interesting hypothesis.

Zentralblatt für Chirurgie, Leipzig

52: 1457-1520 (July 4) 1925

Collapse in Local Anesthesia; Two Cases. F. Härtel.—p. 1458.
*Cholecystogastrostomy in Peptic Ulcers. A. Frenkel.—p. 1459.
Abscess Caused by a Fishbone in the Liver. E. Wilheim.—p. 1464.
Peritonitis Following Migrating Erysipelas. G. Karehnke.—p. 1466.
Ganglions in the Nerve Trunk. A. Zwetowa-Chwedkewicz.—p. 1468.
Surgical Treatment of Tuberculosis of the Shoulder. Schulhof.—p. 1470.
Multiple Malignant Tumors. F. Honigmann.—p. 1472.

52: 1521-1584 (July 11) 1925

Gas Gangrene of Gallbladder in Elderly Man. Kirchmayr.—p. 1522.
Torsion of Gallbladder in Two Women. Fischer.—p. 1527.
Pericranial Sinus in Abnormal Position. Andrassy.—p. 1532.
Technic for Roentgenography of Bronchi. K. Nather and M. Sgalitzer.—p. 1534.
Bronchography by Means of a Laryngeal Catheter. Beck and Sgalitzer.—p. 1537.
Internal Hernias. A. Shapiro.—p. 1541.
Technic of Osteotomy. T. Fohl.—p. 1547.

Anastomosis Between Gallbladder and Stomach in Stomach Ulcer.—Frenkel used this method of treatment in twenty-one cases of peptic ulcer of the stomach or duodenum, with complete success in twenty patients, and without beneficial results in one patient. After the operation, a decrease of the total acidity, and especially of the free hydrochloric acid, is found which is considered to be the therapeutic factor.

Zentralblatt für Gynäkologie, Leipzig

49: 1457-1520 (July 4) 1925

Surface Tension in Cancer and Pregnancy. L. Lederer.—p. 1458.
Surgery of Tubal Pregnancy. M. Turolt.—p. 1467.
*Surgery of Adnexitis. M. Mannheim.—p. 1471.
Kielland's Forceps. F. Heinlein.—p. 1485.
Kielland's Forceps in Breech Presentation. K. Fink.—p. 1490.
Statistics on Cancer of the Uterus. H. Schoog.—p. 1492.
The Placenta in Folklore Therapeutics. A. W. Chochlow.—p. 1497.

49: 1521-1584 (July 11) 1925

Cesarean Section in Edema of the Vulva. F. Skutsch.—p. 1546.
Two Cases of Multiple Ovarian Teratoma. Neumann.—p. 1549.
Pulmonary Emboli and Trendelenburg's Operation. F. Wermbter.—p. 1560.
Lipoids in the Fetal and Maternal Blood. K. Hellmuth.—p. 1566.
Cystic Adenoma of Labium Majus. M. Seidler.—p. 1569.
Hemangiomas in the New-Born. W. Holz.—p. 1575.

Surgical Treatment of Salpingo-Oophoritis. — Mannheim analyzes the results of surgical and conservative treatment in 294 women with adnexitis. His conclusions are as follows: With radical operation, the percentage of cures is greater, but the average length of time spent in the hospital is longer. With conservative treatment, the number of secondary operations is greater. The mortality rate and the frequency of complications in both groups are approximately the same. In the long run the results are better with radical operation.

Časopís lékařů českých, Prague

64: 913-948 (June 13) 1925

Diagnostic Failures in Brain Tumors. A. Heverоch.—p. 913.
*Pathogenesis of Hemolytic Jaundice. E. Zeman.—p. 916.
Osteomyelitis of Maxilla in Infants. V. Tesař.—p. 921.
*Progress in Treatment of Puerperal Fever. J. Saidl.—p. 930. Conc'n.
*Accessibility of Esophagus in Gastrotomy. J. Mourek.—p. 934.
*Progressive Muscular Atrophy After Typhoid. L. Hybner.—p. 935.

Pathogenesis of Hemolytic Jaundice.—Zeman blocked the endothelial system in rabbits by cautious injections of colloidal iron and silver. Practically no hemolysin could be produced in the animals treated with colloidal silver. He attributes to the reticulo-endothelial system the production of hemolysins, which may also be responsible for the hemolytic jaundice.

Progress in Treatment of Puerperal Fever.—Saidl does not believe that Ruge-Philipp's method gives a reliable prognosis. Hemograms are preferable and serve also for checking up on the action of various preparations. Autovaccines gave the best results. Stimulation of the heart is essential for success.

Accessibility of Esophagus in Gastrotomy.—Mourek reports a case of removal of a foreign body from the esophagus by gastrotomy. Simultaneous introduction into the esophagus of a tube filled with contrast material proved that the organ was accessible for almost 11 centimeters.

Progressive Muscular Atrophy After Typhoid.—Hybner reports the clinical history of two adolescent brothers. A progressive atrophy of muscles developed in both after typhoid fever.

64: 949-984 (June 20) 1925

Political Fear. V. Vondráček.—p. 949.
Glanders. E. Zeman and V. Tomášek.—p. 952. Conc'n, p. 1032.
*Diagnostic Failures in Brain Tumors. A. Heverоch.—p. 955. Conc'n.
Pancreatic Calculi. J. Charvát and K. Felklová.—p. 967.

Diagnostic Failures in Brain Tumors.—Heverоch emphasizes the value of publishing diagnostic failures. A diagnostic success does not always mean that we draw the correct conclusions. There is no doubt that we made a mistake in a diagnostic failure. One of his patients was an old woman with all the symptoms of arteriosclerosis and senile dementia. Necropsy revealed a large endothelioma of the dura, compressing the base of the right frontal lobe. Clinical tests revealed her inability to let go a hand she was grasping, or to drop an object. Yet this correct observation did not lead to further investigation. Another case was diagnosed for five years as alcoholic epilepsy. The young man had a diffuse glioma of the right hemisphere. A status epilepticus such as he presented does not occur in alcoholic epilepsy. Nevertheless the diagnosis was persisted in until he died.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

1: 2929-3032 (June 27) 1925

*Vaccine Therapy for Complications of Gonorrhea. A. van der Zijl and W. Schijvenschuurder.—p. 2930.
*Diffuse Glioma of the Pia. C. de Lange and M. C. M. Smid.—p. 2944.
*The Tuberculin Skin Reaction. H. Toxopeus.—p. 2953.
*Pink Disease. A. van Westrienen.—p. 2964.
Connection Between Infectious Sore Throat and Pyelitis. C. Schaap.—p. 2966.

Vaccine Therapy for Complications of Gonorrhea. — Van der Zijl and Schijvenschuurder report twenty-three cases of epididymitis, or other acute complications of gonorrhea in men, treated with antigonococcus vaccine by the vein. No benefit was realized in the old prostatitis cases, and very little in the urethritis cases, but the effect was surprisingly good in the one acute arthritis case and always in acute prostatitis. They advise to begin with a small dose at first. The effects seemed to be better when the patients stayed in bed.

Diffuse Glioma of the Pia.—De Lange and Smid diagnosed at first traumatic spondylitis in the neck region in a 2 year old boy. Treatment on this basis had no results, and certain symptoms suggested meningitis, but the blood did not indicate an inflammatory process. Direct inspection of the brain showed what seemed to be a chronic hyperplastic meningitis, but the microscope at necropsy revealed diffuse glioma of the pia. They compare the case with the two similar ones on record.

The Tuberculin Skin Reaction. — Toxopeus' experiments and arguments apparently sustain his assertion that the Pirquet skin tuberculin reaction is merely induced by the bacterial protein. It is thus not a reliable sign of the presence of tuberculosis.

Pink Disease. — Van Westrienen has encountered three cases at Rotterdam in children under 3. Improvement followed correction of the avitaminosis evident in all; infection seemed secondary. One infant was permanently cured in less than two months under vitamin treatment (tomato juice). In one of the families there seemed to be a familial predisposition to vasomotor disturbances.

2: 1-144 (July 4) 1925

Training in Preventive Medicine. G. van Rijnberk.—p. 2.
Immunization Against Diphtheria. II. H. Aldershoff.—p. 6.
Age at First Infection with Tuberculosis. R. Korteweg.—p. 18.
*Extraperitoneal Access to Kidney and Ureter from the Front. E. Hustinx.—p. 28.
*Anuria from Thrombosis of Renal Artery. Oudendal and Hulst.—p. 41.
Ancient Magic Remedies. VII. Bezoars. M. A. van Andel.—p. 47.
Early Presidents of the Utrecht Medical College. A. J. van der Weijde.—p. 59.

Extraperitoneal Access to the Kidney from the Front.—Hustinx incises from the pubis to 3-4 cm. from the navel, on the median line, and then toward the side on a line reaching to the cartilage of the ninth rib. Through this he draws the peritoneum up out of the way, and in his fifteen cases the peritoneum tore only once, and this was easily sutured. The only difficult step is the closure of the posterior wall of the sheath of the rectus in men. In women who have borne children it is not always necessary to open the sheath. Ample access is thus given to the kidney and the entire ureter, with exceptionally slight interference with the normal anatomic conditions.

Fatal Anuria from Bilateral Thrombosis of Renal Artery.—The clinical picture was so puzzling in the woman, aged 67, that poisoning was suspected. Necropsy revealed thrombosis in the abdominal aorta, from an arteriosclerotic process. The thrombosis had spread into the renal arteries, with almost complete necrosis of the kidneys as the blood was thus shut off.

Svenska Läraresällskapets Handlingar, Stockholm

51: 61-158 (June 30) 1925. In German

Research on the Suprarenals: The Regulation of the Blood Sugar in Epinephrectomized Animals. C. G. Sundberg.—p. 61.

Ugeskrift for Læger, Copenhagen

87: 493-516 (May 21) 1925

Are the Danish People Overfed or Underfed? M. Hindhede.—p. 493.
Cisterna Puncture in Epidemic Cerebrospinal Meningitis. F. Wulff.—p. 500.
Malaria Treatment in Neurosyphilis. S. Lomholt and Johannes Nørvig.—p. 504.
A Danish Insulin Preparation. A. Vangsted.—p. 506.
Action of Gold Salts in Experimental Tuberculosis. H. Møllgaard.—p. 507.

87: 561-576 (June 18) 1925

Ileus from Calculus in Intestine. S. Hansen.—p. 561.
Brain Tumor Versus Hysteria? C. Gram.—p. 563.
"Gold Salts in Experimental Tuberculosis." O. Bang.—p. 566.